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The explosion of mobile devices has created a new set of challenges for IT execs. Key issues that need to be addressed are security, management and making sure that you have a strong mobile policy in place.

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That's good news, because the systems by which the world works today are increasingly unsustainable. They may be networked, but it turns out that being connected isn't enough.

It isn't enough to prevent us from wasting too much energy. From spending too much time in traffic. From producing food too expensively and wasting too much of what we produce. From missing too many sales opportunities and disappointing too many customers because of inefficient supply chains. From making too many medical errors and spending too much to provide healthcare for too few. And most obviously of late, from failing to manage financial risk.

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Smart traffic systems are helping to reduce gridlock by 20%, cutting pollution and increasing ridership on public transit.

Smart food systems based on RFID technology embedded into supply chains are monitoring the flow of meat, poultry and other items – from the farm to the supermarket shelf.

Smart healthcare systems are helping to lower the cost of therapy by as much as 90%.

Police departments are correlating street-level information from myriad observations and devices to identify crime patterns – helping prevent crime rather than simply punishing it.

The list is long and the transformation is just beginning. Its benefits will be reaped not only by large enterprises, but also by mid-sized and small companies – the engines of economic growth everywhere – and by individuals and communities around the world.

Imagine how a smarter planet will transform the ways we pursue everything from economic growth to societal progress to environmental sustainability to cures for disease, as well as the ways we interact with each other and with the world.

The opportunity is before us, and the moment will not last forever. The question is, will we seize it? As we look to stimulate our economy and rebuild our infrastructure, will we simply repair what's broken? Or will we prepare for a smarter future?

Let's build a smarter planet. Join us and see what others are thinking at **ibm.com**/change

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The explosion of mobile devices has created a new set of challenges for IT execs. Key issues that need to be addressed are security, management and making sure that you have a strong mobile policy in place. **Page 22**

GOODBADUGLY

EMC on the prowl

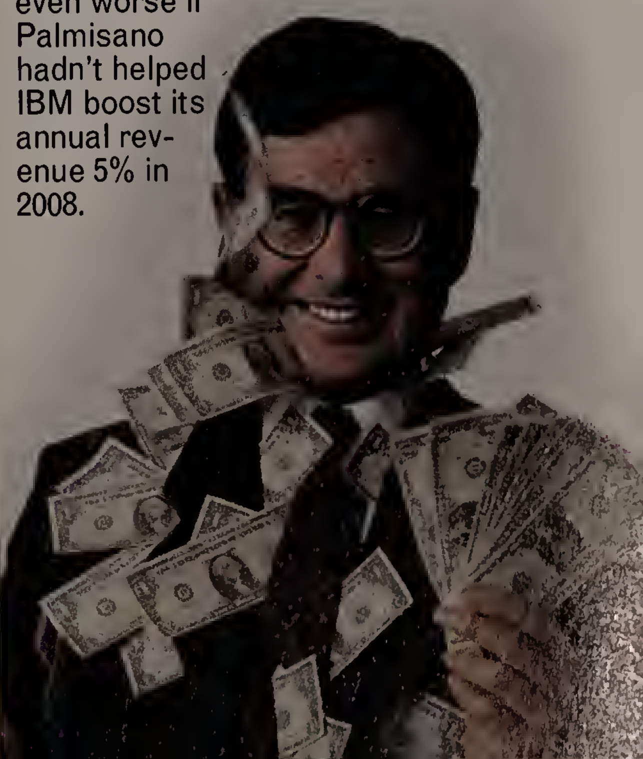
Not that EMC is completely unfazed by the bad economy (it has had layoffs), but CEO Joe Tucci said last week that the company has oodles of cash on hand and is looking for acquisition opportunities. "At this point in time, my No. 1 target would be a company that's in a business that's very similar to ours, not an adjacent market," he said.

Dangerous world

"I've never seen the world this unstable and dangerous," said Bill Boni, who recently was put in charge of Motorola's physical security as well as information security, during a keynote address at the Infosec conference in Orlando last week. From terrorist attacks such as the devastating attack on a hotel in Mumbai to infiltration of payment card networks, as occurred at Heartland Payment Systems, it's clear "there's unprecedented risk to organizations and people," Boni noted.

IBM CEO's big paycheck revealed

Sam Palmisano, chairman and CEO of IBM, was awarded a compensation package valued at roughly $20.96 million in 2008, according to documents filed with the U.S. Securities and Exchange Commission. At a time when IBM and others have been laying off employees and tightening their belts, big numbers like Palmisano's are generating predictable outrage by pundits and others in the industry. Of course, it would look even worse if Palmisano hadn't helped IBM boost its annual revenue 5% in 2008.



Cisco to reveal data center details

BY STEPHEN LAWSON, IDG NEWS SERVICE

Cisco's move into the heart of data centers, expected to be laid out at an event on Monday, holds the promise of easing a big IT headache but may also escalate competition between the company and its partners.

The networking giant is widely expected to announce an entry into the blade server market, codenamed California, at the Monday event, though the company's brief press invitation referred only to a concept Cisco calls "Unified Computing." In a recent blog posting, Cisco CTO Padmasree Warrior described Unified Computing as a move toward unifying computing and storage platforms with networks and virtualization platforms. She also acknowledged Cisco will compete with some of its partners.

What Cisco wants to do, according to industry analysts, is to make virtualization easier — and gain a lot more control over virtualization itself. That goal doesn't necessarily require the company to make its own servers, but some signals point in that direction.

Unified Computing is intended to give IT administrators a way to manage all the components of a virtualized data center from one place, according to Yankee Group analyst Zeus Kerravala. Virtualization lets enterprises run applications in virtual machines (VM) that can be moved from one physical server to another. But when those changes are made, the network topology of the data center can be disrupted. When a VM moves to a server with a different IP address, on a different virtual LAN, it may not perform as well or may even become unavailable, Kerravala says.

So network engineers have to go in after each change and make adjustments, such as changing access control lists and reconfiguring the network.

"For the first time in history, network managers have had to become slaves to the computing guys," Kerravala says.

Most enterprises have been able to realize the benefits of the first phase of virtualization, consolidating their data centers for economies of scale and simpler management. But it's been hard to achieve full virtualization, in which VMs can continuously move among servers, Kerravala says. This would allow for adding processing power as demand for an application grows, or for moving tasks off a physical server at night for hardware maintenance.

"True virtualization isn't here, because we don't have tools to manage the computing and the network infrastructure together," he says.

Full virtualization essentially requires automation. With its Unified Computing initiative, Cisco wants to supply that automation under its own management system, and in the process put the network at the center of the virtual world, Kerravala says. When IT administrators want to move a VM, they'll move it in Cisco's management console and everything else will adjust automatically.

This isn't a new idea. Others, including HP and VMware, are pursuing roughly the same goal. But tools that do this are so new that they aren't really ready for mass deployment in enterprises, says Dave Passmore, an analyst at Burton Group. He believes it will be two years before most companies can advance from static to dynamic virtualization. So there is still time for Cisco to enter the fray.

Cisco won't try to carry out this plan at the expense of VMware, the dominant supplier of virtualization software, analysts say. The two companies already have a close partnership, to the point that Cisco offers one data center switch, the Nexus 1000V, that can run as software in a VMware VM.

But it may not be possible for Cisco to automate virtualized data centers from the network without having a hand in the servers that will have to carry out commands from its management system, Kerravala says. That could come about through either building the servers itself or partnering, he says.

Cisco's track record shows the company often leans toward developing its own technology or buying it in the form of promising start-ups. Cisco has acquired 17 companies since the beginning of 2007. And building its own servers probably would give it more control over the complete system, Kerravala says.

But the move would have some costs for a company that has had to work side by side with computing vendors such as HP, IBM and Dell for as long as it's been supplying enterprise LAN gear.

"The war has begun, and with or without this move, Cisco, HP and IBM are becoming more competitive," Yankee Group's Kerravala says. But despite the brewing confrontation, IT executives probably won't have to worry about sheer incompatibility among their products, he adds. "They're becoming more competitive, but they're still going to have to find a way to work together, for the sake of the customer," Kerravala says. ■

Microsoft, Intel back plan

Contrary to previous reports, Cisco's data center vision does not seem to be a largely solo effort.

Microsoft, Intel, BMC, EMC Smarts and VMware are expected to endorse Cisco's "Unified Computing" data center strategy at the March 16 launch.

Sources say these companies will be on the roster of partners Cisco is lining up for its strategy, which is also expected to include the introduction of the company's 'California' blade servers. Blade server stalwarts IBM and HP are – or were – longtime partners of Cisco's in data center applications, but California is expected to strain those relationships and keep those companies off Cisco's partner list this time around. IBM is uniting with Juniper for Project Stratus; and HP is expected to tightly link its blade server and ProCurve networking operations.

While not exactly a solo effort, Cisco's Unified Computing partnerships appear to be a bit looser than the IBM/Juniper union, observers note. Microsoft, Intel and VMware, for example, partner with several Cisco competitors in data center applications, and one – Microsoft – competes with Cisco in unified communications and data center virtualization.

In addition to the five partners, Oracle and SAP are expected to be present to demonstrate how their applications can be mobilized as virtual machines (VM) in a Cisco Unified Computing environment; and service provider Savvis will be introduced as a beta customer for Cisco Unified Computing products, sources say.

Also, Cisco may roll out an additional wave of partners in a month, which could include Dell, EMC (storage), NetApp and Emulex, sources say.

Cisco would not confirm the information.

— JIM DUFFY

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Chicken-egg syndrome with skills and experience

Re: Network skills in demand, pay well in down economy (www.nwdocfinder.com/9124): I agree, certain skills will always be in demand. That is, if you are already working in the industry for five to 10-plus years. However, my son is an honors graduate of I.T.T. Norwood 2008 (P.C. server/networking), and no one will hire him. Same for the son of a friend of mine — he has a law degree, and can't even find a clerical job. If my son gets a rare call back, and an even rarer interview, businesses want years of experience before even considering him. How is any new college graduate expected to break into this business, if no one will give him even a chance?

> **“It's awful to see Palmisano (and other CEOs) receiving increases in pay, benefits and deferred compensation when they make massive layoffs and continue to cut employee benefits.”**

Bigger yet, who is going to take my place when I decide to retire? Not everyone has five to 10 years of experience.

Our jobs aren't just fixing hardware — a good portion of it is managing the business properly to suit the clients' needs. Businesses need to hire interns/apprentices who are willing to learn the ropes under the guidance of senior peers. So please, loosen those ideals, and give those college graduates a chance.

tcmehrtens

In reply to tcmehrtens:

I, like your son, was turned down because of lack of experience, but unlike your son I was nowhere near an honors student. I did however go to a traditional four-year school for my B.S. in ECE. What I would recommend doing, and how I got through the red tape, was to sign on with a contracting company. I worked as a contractor for four months then was offered a regular full-time position with benefits at the company. Sure, being a contractor doesn't have glamour of a regular position, but it gets your foot in the door and you get experience plus the company can gauge your ability to work without having to take so big a financial risk.

Jon

Yet another intended feature of SharePoint

Re: Where oh where has my Content Type metadata gone? (www.nwdocfinder.com/9125): This is yet another "by design" SharePoint feature. I don't think there is an elegant approach to solve this without custom coding. I don't believe Microsoft intended to have meta-data from the template carry over and the content types architecture was left unfinished. To maintain integrity of the templates with its content types, template should be linked in the content type definition, and to force default meta-data, an event handler could be developed to implement this logic.

Daniel Cohen-Dumani

Disgust over IBM CEO pay hike

Re: IBM CEO Palmisano gets paid nearly $21 million in '08 (www.nwdocfinder.com/9127): Pretty disgusting. It's awful to see Sam Palmisano (and other CEOs) receiving increases in pay, benefits and deferred compensation when they make massive layoffs and continue to cut employee benefits.

Palmisano and company have gotten away with age discrimination in layoffs, had employees train their foreign replacements and taken money from state governments as incentive for creating local jobs, then reneging on their end of the agreement. For this, Palmisano will get a $10K per day pension package.

Anon

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 492 Old Connecticut Path, Framingham, MA 01701-9002. Please include phone number and address for verification

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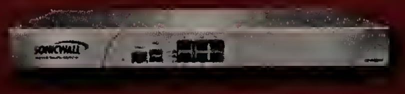

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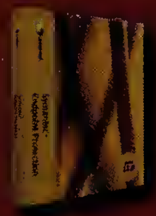

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Microsoft era of 'Take it or leave it' is over. Mitchell Ashley writes in his Converging on Microsoft blog: "Even mighty Microsoft can't muscle customers in this challenging economy. We've finally seen a crack in Microsoft's ability to command whatever license fees they see fit from customers, with the drop in prices for Microsoft Office 2007 Enterprise Subscription Agreements. ESA pricing dropped by 26%. If you aren't familiar with Microsoft ESA subscription program, it basically lets you lease, or "subscribe", software rather than purchase the software and pay annual maintenance. Rarely do we see Microsoft dropping prices but I suspect we're seeing this price cut for three key reasons: the economy, Open Office and Google Apps, Relative Parity with Office Live." **www.nwdocfinder.com/9131**

3-D light system revolutionizes way fingerprints are taken. The Layer 8 blog reports: "The goal: develop a machine that can snap 10 fingerprints in high resolution in less than 10 seconds, without human intervention. Such technology is on its way in the form of a 3-D light system developed by the University of Kentucky, according to the U.S. Department of Homeland Security's Science & Technology Directorate. In fact, DHS this month gave FlashScan3D, which works with the University of Kentucky, $418,912 to further develop a contactless finger print/biometric system. The University of Kentucky's Center for Visualization and Virtual Environments has developed a technique called structured light illumination, where a pattern of dots or stripes is projected onto a curved or irregular surface. By calculating how the pattern warps over a curve, scientists can calculate an object's exact shape — similar to how a flying bat uses sonar to distinguish foe from food by comparing its readings from different angles, the DHS said." **www.nwdocfinder.com/9132**

FBI searches office of ex-D.C. CTO, Obama's CIO pick. FBI agents are searching the office of former Washington, D.C., CTO Vivek Kundra, who has just been named as the CIO for the Obama administration, according to the Politico blog. Blogger Ben Smith cited a spokeswoman for the FBI's D.C. field office, who said the search is part of an ongoing investigation. Two men have been arrested: Yusuf Acar, described as an information security officer who was also responsible for online RFPs and for contracting; and Sushil Bansal, listed on the city's procurement Web site as the CEO of the Advanced Integrated Technologies Corporation." **www.nwdocfinder.com/9133**

IT VIDEO

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COOL TOOLS:

Octiv Air streams iPod tunes

Keith Shaw tries out the wireless Octiv Air system from Altec Lansing, separating a music player from its speakers.

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BEST OF IPHONE APPS:

Amazon Kindle on iPhone

Jealous of Kindle 2 owners? No need to be with the new Amazon Kindle for iPhone app, available free at the App Store. Watch our mini-review.

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IDG NEWS WIRE:

Dell rugged laptop fails drop demo

Dell's Latitude E6400 XFR laptop is designed to withstand drops, dust and high pressure water spray, however, the laptop Dell used didn't withstand the rough treatment as part of its demo.

www.nwdocfinder.com/9136

BEST OF NWW'S NEWSLETTERS

Vendors debate 802.11n

Wireless: When the wireless LAN controller architecture came into its own about half a decade ago, an exhausting, cutthroat features war ensued. Ding! It's now officially Round 2, with the industry in fisticuffs over Draft 2.0 802.11n system architectures and features. But 802.11n is far more complex than its technical predecessors with many more optional components, making product comparisons a dizzying task. That's why my colleague, Robin Layland, president of Layland Consulting, and I recently issued a challenge to the 802.11n industry, asking the vendors to specify just what primary value proposition(s) they bring to the table. Six vendors participated: Cisco, Enterasys, Motorola, Proxim Wireless, Trapeze Networks and Xirrus. They have all submitted written responses to Part 1 of this challenge, describing their one or two capabilities they think outshine anyone else in the industry. **www.nwdocfinder.com/9128**

SMB: First appearing in 1995, the "wiki" approach to creating interactive and collaborative Web pages quickly became the star format for social networks, but too often business also-rans. Part of the problem comes from top-down managers uncomfortable with underlings making changes without authorization, and from stories of update wars on the most famous wiki, Wikipedia, the encyclopedia written by users. But successful corporate wikis abound, including SamePage from eTouch Systems. Yes, wiki is an Hawaiian word for fast, and wiki wiki is nonsensical, like saying "fast fast" or "run run." The word sounds cute and friendly, another strike against the technology being accepted in the boardroom. Yet what type of business is more serious and conservative than a boutique merchant banking firm, especially in today's financial climate? Meet Armen Grigorian, a manager at Defoe Fournier and Company, merchant bankers since 1824. **www.nwdocfinder.com/9129**

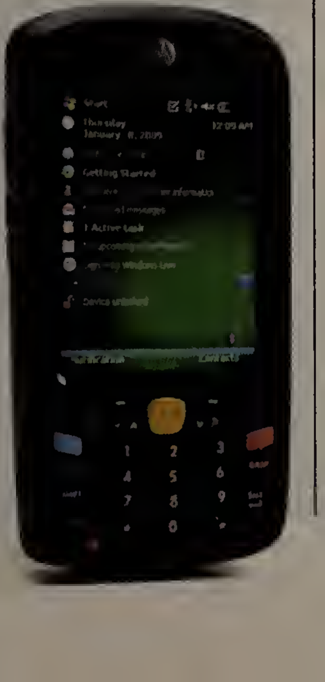
Tech exec: In its 2008 Data Breach Investigations Report, the Verizon Business RISK Team cites omissions and misconfigurations as two of the top network problems that lead to significant data breaches. An omission is a standard security procedure or configuration that was believed to have been implemented, but in actuality it wasn't. A misconfiguration is an erroneous system, device, network or software setting that can leave an opening for a hacker to infiltrate a system. In very large networks, omissions and misconfigurations can be common occurrences because of the complexity and interrelationships of firewalls, routers and other security devices. **www.nwdocfinder.com/9130**

IBM to ease multivendor security management

IBM is introducing software that lets customers manage multivendor desktop security agents via a single console, affording them a broader choice of security products without proliferating management platforms. Proventia Endpoint Secure Control aims to support software security clients for multiple vendors in four areas: system protection, data protection, configuration management and system maintenance. It's intended as an alternative to static desktop security suites from McAfee and Symantec that lack the flexibility to pick and choose which vendors supply, for instance, antivirus software and which provide personal firewalls. Initially, Proventia ESC will support antivirus software from TrendMicro, and IBM says it plans to add more vendors and products over time. **www.nwdocfinder.com/9138**

Apple to unveil iPhone 3.0 OS. Apple is expected to preview Version 3.0 of its iPhone operating system software this week, prompting speculation that a new iPhone may be in the works for summer release. Also expected are tools for building iPhone applications downloaded from the company's App Store. Industry watchers will be tuned in to see how many of the changes take into account the needs of enterprise users and IT groups, where Apple has traditionally been weak. So-far absent features important to enterprise users include on-device encryption, something better than four-digit numeric passwords, cut-and-paste ability, and synchronization with Microsoft Exchange controls. The last major upgrade to the operating system, Version 2.0, was released in July 2008, along with the new iPhone 3G. **www.nwdocfinder.com/9139**

Semi-rugged Motorola handheld targets enterprise. Motorola has released the latest of its enterprise-class mobile computers, adding a more powerful processor and an updated Windows operating system. The MC55 Enterprise Digital Assistant is intended as a midrange, semi-rugged mobile device, aimed at hard daily use in markets such as healthcare, field service, warehousing and public safety. Like its predecessors, the MC55 combines a cell phone, two-way radio, barcode scanner, digital camera and mobile Windows-based computer in one handheld. The 5590 model has built-in Wi-Fi and Bluetooth; the 5574 model adds to that quad-band GSM/GPRS/EDGE cellular and integrated GPS. The MC55 has a 3.5-inch QVGA resistive touch screen, and it can be ordered with a cell-phone-like keypad or a full QWERTY keyboard. **www.nwdocfinder.com/9140**



Microsoft looks to reduce carbon footprint by 30%. Microsoft has set a goal for reducing its carbon emissions and plans to support the development of software that can help address climate change issues, according to the company's chief environmental strategist. Microsoft hopes to reduce carbon emissions per unit of revenue by 30% of 2007 levels by 2012, Rob Bernard said in a blog post. Improving energy use in buildings and operations, reducing air travel and increasing use of renewable energy will help the company meet that goal, he said. On the software front, Microsoft has begun offering products for companies to use to help them control their carbon footprint. An application for Microsoft's Dynamics AX enterprise resource management software, introduced in February, lets businesses find out the carbon footprint of various aspects of their operations, for instance. **www.nwdocfinder.com/9142**

Isilon boosts speed, capacity with new NAS boxes. Scale-out network-attached storage vendor Isilon released three products designed to improve performance for a variety of data-access needs, from high-performance, I/O-intensive applications to nearline archiving. Isilon added the new IQ 36000X product to its X-series line, increasing highest capacity from 2.3PB to 3.45PB, and introduced two storage lines — the S-Series for transactional I/O and random access and the NL-Series for nearline storage. The goal is to "provide applications the ability to scale and grow without dealing with new complexity," says Ram Appalaraju, the vendor's vice president of marketing. **www.nwdocfinder.com/9143**

MIT breakthrough promises lighter, fast-charging batteries. Scientists at the Massachusetts Institute of Technology have developed a way to charge lithium ion batteries in seconds, instead of hours, that could open the door to smaller, faster-charging batteries for cell phones and other devices. The scientists discovered that lithium ions, which carry electricity in the battery, can move much faster if they are aligned with tunnels that can be accessed from the surface of the battery. The breakthrough by MIT Professor Gerbrand Cedar and graduate student Byoungwoo Kang is the development of a reengineered surface material for batteries that allows lithium ions to move quickly across the surface of the battery and channels the ions into tunnels. A prototype battery built using this surface material can be charged in 20 seconds or less, compared with six minutes for a battery cell that does not use the material, MIT said. **www.nwdocfinder.com/9144**

Verizon unveils UC service. Verizon Business is offering a unified communications managed service that gives users desktop access to their voice, e-mail, Short Message Service and Web conferencing services. Based on the Microsoft Office Communications Server 2007 R2 platform, Verizon's service integrates and manages applications including: an on-premise Web conferencing application; an enterprise voice application that lets users make voice calls through both computers and traditional telephones; and an enhanced presence application that provides users with real-time information on their colleagues' location and availability. Verizon can host the service for customers at one of its 200 data centers or manage it remotely from the customer's premises. **www.nwdocfinder.com/9145**

HP services menu goes a la carte. HP's EDS division has unbundled its services offerings and now provides customers with a choice of service tiers at different pricing levels. For instance, EDS Application Management Services now enables customers to pick higher service levels for mission-critical applications and for applications of a lower priority, CIOs can opt for lesser services. In the past, customers would need to apply the same level of service — and price — across their entire application portfolio. Among HP's managed services offerings are: server and storage operations, which provide 24-7 monitoring and support; service desk, which is designed to augment in-house support; flexible computing, which lets clients pay only for the computing they use; and managed messaging to tackle availability, security and compliance for Microsoft Exchange environments. **www.nwdocfinder.com/9146**

Stimulating broadband with fiber

BY BRAD REED

When it comes to bringing broadband to underserved areas of the United States, there is a general consensus that wireless technologies such as 802.11y, WiMAX and Long Term Evolution will be crucial to getting people connected. However, many experts and service providers say that fiber infrastructure could be a big a piece of the puzzle as well.

Any discussion of building more fiber infrastructure to expand broadband access has to start with creating more backbone capacity in rural areas, as both wireline and wireless operators need backbone access to operate high-speed services. Essentially, backbones are clusters of fiber-optic trunk lines that small ISPs buy bandwidth from to connect their users to the Web. The problem is that many rural ISPs are located farther away from backbones' points of presence (PoP), which are typically located in major population centers. Thus, they have to pay more money for backbone access than ISPs located in more populated areas.

To rectify this, some small rural ISPs are considering banding together to create their own local backbones. Matthew Polka, the president of the independent service provider industry group the American Cable Association, says many of his members are interested in using stimulus funds to construct backbone infrastructure that will lessen their reliance upon big incumbent carriers.

"Our members are chiefly concerned with building the fiber backbone deeper into rural America," he says. "That way they can increase their service speed and lower the costs of broadband connectivity."

Harold Feld, the senior vice president for the open media advocacy group Media Access Project, says providing funds to have several

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How broadband stimulus money will be spent

Now that the government has allotted $7.2 billion for spending on broadband infrastructure in the United States, here is a breakdown of where that money is going and how it will be spent.

- **$2.5 billion** to the **U.S. Department of Agriculture** for loans and loan guarantees to fund broadband construction in rural areas.
- **$4.7 billion** to the **National Telecommunications and Information Administration** to fund the Broadband Technology Opportunities Program that aims to improve broadband access to both consumers and public safety departments. This funding includes:
- **$200 million** for competitive grants to expand computer capacity at public institutions such as libraries and state universities.
- **$350 million** for broadband mapping that will give the government more accurate data on U.S. broadband capabilities.
- **$10 million** for program audits and oversights.

AT&T makes $1B '09 network investment

IBM integration, Asian expansion among the highlights

AT&T will invest $1 billion this year to expand and upgrade its global network with a particular emphasis on adding business applications such as managed hosting, content delivery and telepresence.

AT&T says the investment will be targeted at expanding its business service offerings to both small companies and large corporations. Broadly speaking, AT&T has divided its investments into four categories: IBM network integration, global network expansion, application delivery and mobility services.

AT&T's investment in integrating IBM's global network operations with its own stems from a 2007 deal that made IBM into AT&T's telecommunications and network management services provider. AT&T says this partnership has helped it add "on-the-ground support and networking expertise in 48 different countries." AT&T's international network upgrade investments include deploying submarine cable capacity to Alaska, Australia, India and Puerto Rico, as well as to routes from North America to Europe. AT&T will expend its VPN services to 18 countries and it will more than double the number of countries where it offers its virtual private LAN service. AT&T also says it will start implementing a multiyear plan aimed at delivering IPv6 networking services to governments and companies around the world.

In addition to its network service expansions, AT&T will deploy a new network capability known as AT&T Wavelength Private Line, a managed service that the company says will support 10Gbps Ethernet LAN and WAN configurations. In order to improve its service quality, AT&T will speed up its backbone by deploying 10GB edge equipment and adding more Cisco CRS1 routers over some of its routes.

On the application delivery side, AT&T is upgrading network applications such as its VPN, telepresence, unified communications and hosting offerings. The company will expand its network offerings into Asia by offering telepresence in China for the first time and managed IP telephony and LAN services for the first time in China, India, the Philippines and Thailand. AT&T also will increase its data center hosting capacity in three of its U.S. data centers, as well as data centers in Tokyo, Hong Kong and the United Kingdom.

For mobility services, AT&T will continue deploying its location-based services, mobile enterprise applications and Enterprise On Demand platform that is designed to let IT departments manage the deployment of their own wireless devices.

AT&T says it has invested more than $3 billion in business network upgrades since 2006 to help its customers transition from legacy networks to MPLS-based networks and managed services.

— BRAD REED

Blizzard whips virtualization push

Variety of tools help after storm 'fries' Colorado Springs data center

BY JOHN FONTANA

DENVER — The road to virtualization for Michael Riggs was covered with 5 feet of snow, which it turns out was a blessing

The systems engineer with Falcon School District 49 near Colorado Springs, Colo., had his entire data center fried by a Christmas-time blizzard in 2006 that covered the site's air conditioning compressors under a snow drift. The drifts, coupled with closed roadways, made data center rescue impossible.

The result was an internal data center temperature of 130 degrees that baked for 12 hours, and an insurance check that provided the needed funds for a virtualization project.

"We got a bailout before bailouts were popular," Riggs said during his virtualization-track presentation at *Network World's* IT Roadmap Conference in Denver.

But he doesn't advocate waiting for an act of God to get started with virtualization. He says he has never looked back. The school district has 50 virtualized servers housed on two physical hosts running VMware Infrastructure 3 (VI3) in a data center that supports some 1,500 teachers and staff.

Along the way Riggs learned to deal with virtual machine sprawl and how to virtualize Microsoft Exchange, SharePoint Server and SQL Server.

And the school district was able to cut its power and cooling costs in the data center by 50%.

"We really have no regrets," Riggs said. "With two clicks we can instantiate a VM. There is no greater feeling in the world as an SE then to bring up a half dozen servers for test, or production even, and not waste my morning let alone six weeks trying to provision things."

Riggs is in Phase 3 of the project, which focuses on setting up a disaster-recovery site and getting VMware's VCenter Site Recovery Manger deployed.

The school district's virtualization infrastructure is based two HP DL 585 servers with dual-core quad processors with 32GB of RAM.

"We are seeing 70% utilization," Riggs said.

So far, the district has virtualized all its data center applications, including Microsoft Exchange, SharePoint and SQL Server. The Exchange 2007 64-bit installation is anchored by two four-processor servers each with 8GB of RAM. One runs the Exchange Edge server and the other hosts the hub transport, mailbox and Outlook Web Access services.

The SharePoint installation is a single server for intranet and publishing, and the SQL Server infrastructure is made up of about a dozen virtualized servers.

The only application Riggs has not been able to virtualize is the district's Web-based student information system because the vendor is not supporting virtualized environments.

But the district has been able to expand its virtualization efforts by using Microsoft's Terminal Services RemoteApp technology to host line-of-business applications.

"Those were a pain to maintain on the desktop," Riggs said. Now all that is centralized.

And he noted that another big achievement was virtualizing the district's edge firewalls. "It has worked out great not having a physical infrastructure just for a single purpose."

But the road is not without its bumps.

Riggs said those moving to a virtualized environment should confirm all the hardware they use is on the virtualization vendor's hardware compatibility list and to get "buy-in" from all application providers.

And he says users should not rely on ad-hoc capacity planning. "It will bite you," he said. "Just properly size it from the beginning." ■

Stimulus

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rural ISPs work together to make a native backbone would be a smart strategy because it would benefit several small ISPs rather than the few large telecom carriers.

"If I were the NTIA [National Telecommunications and Information Administration], I'd encourage people to put in a cluster of grants that center around one large project," he says. "I'd be encouraging people to think of this not as a zero-sum game but as a cooperative game … the way to think about it is, 'You have a fiber connection and I have a fiber connection so let's get together to build a backbone.'"

In addition to building fiber backbones in rural areas, some ISPs also think that subsidizing fiber-to-the-home (FTTH) connections would be feasible for certain rural areas that have relatively high population densities. Patrick Knorr, the COO of cable and broadband provider Sunflower Broadband, says there are some suburban communities in his vicinity that have been sprouting up in rural areas that would have enough population density to justify building out FTTH infrastructure.

"Fiber to the home, like a lot of wire-based solutions, is cost intensive," he says. "But it is cheaper than DSL or coaxial cables. Fiber works better over long distances because it doesn't require as much maintenance as a lot of other technologies. The issue is that there is a significant initial infrastructure cost, which is why there should be opportunities for subsidies to build FTTH in areas that otherwise wouldn't be able to access fiber service."

What about broadband over power lines?

Fiber isn't the only way that ISPs are trying to deliver broadband to rural areas. IBM recently started building out broadband over power line (BPL) networks to deliver high-speed Web connections to areas that only have dial-up connections. In collaboration with Alabama-based broadband provider International Broadband Electric Communications (IBEC), IBM plans to deploy BPL networks through seven electric cooperatives in Virginia, Michigan, Alabama and Indiana. Once operational, IBEC will serve as the cooperatives' official ISP.

Bob Hance, CEO of the Midwest Energy Cooperative in Michigan, says his company decided to participate in the BPL network program after a survey asking its customers whether they wanted to get broadband access through their electrical service. The survey results, Hance says, were overwhelmingly in favor of signing up for the broadband program.

However, some network operators and analysts say BPL faces some major issues that make it unlikely to catch on as an alternative to fiber or wireless broadband technologies. In the first place, Knorr says, any BPL operation will have to be run jointly by an ISP and a utility company, which will make maintenance more difficult than with services that are run exclusively by cable or DSL operators.

"The problem with BPL is that the power companies don't have the expertise to run an Internet service," he says. "It's very difficult to deploy BPL practically."

The other big problem with BPL is that it has yet to work on a widespread basis. Because BPL can run into interference with amateur and emergency radio, organizations ranging from the Federal Emergency Management Agency to the National Association for Amateur Radio have declared it a non-starter. Additionally, some high-profile plans to deploy BPL in recent years have fallen through.

"Broadband over power line has all sorts of issues," notes Declan Byrne, the CMO of wireless broadband access vendor Airspan. "It has problems with noise of the transmission lines and it has problems with multiplexing over power cables." ■

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Measuring data center efficiency

Green Grid metric catching on, but measurements can be misleading

BY JON BRODKIN

Containing the cost of powering the data center is one of the chief priorities for many IT and facilities professionals. But determining whether a data center is a paragon of green virtue or an unrepentant gas guzzler is trickier than it might seem at first glance.

That's why the Green Grid, a nonprofit trade group led by IT vendors, devised Power Usage Effectiveness (PUE), which compares the total power used in a facility with the power devoted specifically to IT equipment. But as with almost any new standard, there is confusion within the industry about how to measure PUE and in what context it is useful.

PUE measures the number of watts needed to power and cool IT gear, taking into account all power dedicated solely to the data center, an important distinction in mixed-use buildings that house both IT equipment and office space.

"A PUE of 2.0 indicates that for every watt of IT power, an additional watt is consumed to cool and distribute power to the IT equipment," according to a Google research paper.

The Uptime Institute measures PUE in a fee-based service for its members, and found an average rating of 2.0 to 2.5. But Kenneth Brill, the institute's founder and executive director, is wary of businesses misinterpreting the measurements.

Say an IT shop virtualizes its servers, reducing its IT power consumption by 20%. Few observers would consider this a bad thing, but it might result in a higher PUE, angering the facility director's boss, Brill says.

"Is it the facility manager's fault that the IT load is light?" Brill asks.

Alternative measures

The Green Grid's PUE is one of numerous attempts to analyze IT power usage and efficiency. The Uptime Institute has proposed alternative measures, including Corporate Average Datacenter Efficiency (CADE), which takes into account not only power usage but also a company's CPU utilization rates and the effectiveness with which the data center's IT equipment transforms energy into "useful" work.

Separately, the U.S. Environmental Protection Agency is preparing an Energy Star specification for servers, which is expected to be finalized this spring. The Storage Networking Industry Association is developing a metric for analyzing the power efficiency of storage devices.

There has to be some way of analyzing an individual data center's use of power, and PUE is a great step in that direction, says Enterprise Strategy Group analyst Mark Peters. But people who use PUE should recognize its limitations. PUE looks at a data center's stats for wattage in and wattage out, but it cannot be used to say whether a data center is using its resources efficiently, he says.

A data center could achieve disk utilization rates of 99% and a PUE of 1.2, but if that same data center is failing to de-duplicate data, it's probably wasting storage space and energy, he notes.

What is PUE?

Power Usage Effectiveness is a new metric for determining a data center's power efficiency, and is calculated with the following equation:

$$PUE = \frac{\text{Total facility power}}{\text{IT equipment power}}$$

A PUE of 2.0 would indicate that for every watt used by servers and other data center equipment, an additional watt is needed to cool and distribute power to the machines.

TOTAL FACILITY POWER

Calculations must cover everything that supports the IT equipment. This includes:

- Power delivery components: UPS, switch gear, generators, power distribution units, batteries, distribution losses
- Cooling system components: Chillers, computer room air conditioners, direct expansion air handlers, pumps, cooling towers
- Miscellaneous needs, such as data center lighting

IT EQUIPMENT POWER

Centers on compute, network and storage nodes: Servers, storage, telco equipment, switches, routers and so on.

"I absolutely love PUE," Peters says. "But data center efficiency is a much bigger topic than power usage efficiency."

Two years after being proposed, PUE is starting to catch on. Officials at the SuperNAP co-location center in Las Vegas use internal PUE measurements to argue that the data center is the most energy efficient in the world. PUE is being adopted by the European Union within its data center code of conduct standard, according to Green Grid officials. But PUE should still be seen as an interim metric, says Mark Monroe of the Green Grid's board of directors.

"What everyone wants to get to is what are the computers doing with that electricity, and how efficient is that computer?" says Monroe, who is also the director of sustainable computing at Sun. "How much useful work is coming out of that computer?"

Today, there's little sense in comparing one data center to another because companies might be measuring it differently, Monroe says. PUE is useful as a metric to compare your data center to itself over time, he says.

The Green Grid's Web site details what must be measured to calculate PUE, such as power delivery components like UPS, switching gear, generators, power distribution units, batteries and power losses. But the organization is still working toward implementing detailed specifications and a certification program in which it will verify PUE at individual facilities. That should happen within a year, Green Grid officials say.

Gaining enterprise attention

While PUE has gained traction among industry powers such as Google and Microsoft, which both boast of low PUE ratings, Peters says enterprise customers for the most part aren't measuring it at their own data centers. "It's too new for it to have filtered that far," he says.

Still, numerous vendors have stepped up to provide software tools for measuring both total IT power usage and the power devoted to individual devices. And some large enterprises have begun tracking PUE and how it changes over time.

James Carney, executive vice president of data center planning at Citigroup in New York, says he measures PUE at all the company's data centers, but getting a meaningful measurement is difficult at facilities that include both data center equipment and

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Paying for Internet content once is not enough

NET INSIDER
Scott Bradner

What is it about being in government that makes people think we should pay multiple times for the same thing?

I'm not talking about paying many times what something is worth, but rather paying for something once just to be told that you need to pay again before you can use it. U.S. Rep. John Conyers (D-Mich.) is the latest purveyor of this concept, trying to require us to pay for results of research projects that we paid to run in the first place.

Conyers, along with a few friends, have reintroduced a bill he tried to get passed last year — The Fair Copyright in Research Works Act.

The National Institutes of Health (NIH) requires researchers to make papers that result from government grants and which are published in scholarly journals publicly available within a year of being published. This is so people who paid for the research — you and me — can read the results of our investment without having to pay for access to a journal. Conyers' bill would make this requirement illegal. He wants us to pay both for the research and then pay again for the results.

This is far from the first time that some Congress critter wanted the public to pay tribute in order to get something they had already paid for. One previous example was Sen. Rick Santorum's (R-Pa.) attempt to have us all pay twice for weather information (www.nwdocfinder.com/9122). The problem is not just in Congress — other government groups have the same idea (www.nwdocfinder.com/9123).

In most cases this desire for double billing comes from one or more companies that would collect the money from the second bill. In this case the companies are the ones that publish the scholarly journals. They are not content to just get the results of government-funded research for free — they also want to keep us from getting the same deal by charging us for what they got free.

The publishers have put forward a legal smokescreen claiming that their rights are being violated. The smokescreen is exposed as false by a number of commentators, including 46 law professors who wrote Conyers about the bill.

Conyers seems to have bought into the smokescreen, or at least he seems to be parroting the publishers' story. He has ignored the professors and is also ignoring the comments of 33 Nobel Prize winners who wrote him to say that the bill would hurt U.S. research.

I thought that the term "representative" referred to the concept of representing the people of your district, or at least the people in your district who voted for you. The people in his district helped pay for medical research and Conyers is trying to make it so they cannot see the results unless they pay more. I find it very hard to see how Conyers' actions can fit into my understanding of what the job of a representative is. I wonder who Conyers is representing if it's not the people of his district.

Disclaimer: Harvard provides guidance on the NIH policy and has similar rules in the Faculty of Arts and Sciences and the Law School. But I've not seen any university position on who Conyers might be representing, so the above question is my own.

Bradner is Harvard University's technology security officer. He can be reached at sob@sobco.com.

What's behind move toward managed services

EYE ON THE CARRIERS
Johna Till Johnson

When the going gets tough, the tough get ... managed? Apparently so. One of the major trends I've seen in recent months is the move toward managed services. More than 65% of the companies I work with say they have deployed managed services — more than double the 27% that were doing so in 2006. The most common types of managed services? Managed router services (deployed by 49%), followed by managed VoIP (22%).

A couple of factors are driving the trend. First is that carriers and other service providers have been aggressively pricing managed services — to the point where some of my clients were able to obtain fully managed services (along with brand-new routers) for less than they expected to pay for unmanaged services. (Yet another reason for doing a full-scale RFP — these kinds of bargains typically kick in towards the end of a negotiating process.)

“In this economic environment, the more costs you can contain and control, the better — and managed services offer the promise of consistent services for a flat monthly fee.”

Another huge reason is lack of staffing. As IT departments are asked to slash budgets by as much as 40%, the staffers that get the ax are often those who manage and maintain, rather than architect, innovate or deploy. This means that outsourcing management is the only logical move.

There's also the skill-set challenge. Particularly for emerging or complex technologies such as VoIP or security, organizations can't easily find (or justify spending money on) subject-matter experts.

Finally, there's the desire to keep costs stable and predictable. In this unpredictable economic environment, the more costs you can contain and control, the better — and managed services offer the promise of consistent services for a flat monthly fee.

But do they deliver? Folks who've been in IT a while like to talk about the outsourcing pendulum — during recessionary times, when IT is viewed primarily as a cost center, companies turn towards outsourcing (for many of the reasons noted above). But they inevitably turn back, and the dissatisfaction rate with outsourcing deals runs as high as 75%.

So it's reasonable to ask whether the move towards managed services is such a great idea. On the whole, I think it is, particularly for services such as managed-router, -firewall and -VoIP offerings.

But even a good idea can go too far. I've seen companies that want to outsource their entire infrastructure departments. That sounds good on paper, but what happens the next time a new application is rolled out — one requiring not just an increase in bandwidth, but effective optimization and prioritization? Many times the service providers either can't handle the load, or charge an arm and a leg to make changes.

And that's the primary reason the outsourcing pendulum always swings back: managed services can be great ways to wring costs out of a steady-state environment, but when the economy improves and IT begins to innovate, outsourcing often increases an organization's costs, or limiting agility.

The upshot? Consider managed services — but keep your contracts short-term (two to three years). When the economy opens up, you'll want the freedom to reconsider your options.

Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

Layer 7 visibility in the LAN

BY JEFF PRINCE

Enterprises have seen an explosion of new applications, devices and classes of users on their LANs, which makes it harder than ever for IT to ensure network performance, secure corporate assets and comply with regulations. In response, next-generation intelligent LAN switches are emerging that are designed to provide stateful, deep-packet inspection up through Layer 7, providing granular user- and application-level controls.

Other network devices that have already "moved up" the protocol stack include WAN-acceleration platforms and load-balancing switches. Now, by maintaining state information, intelligent switches can forward based on flows instead of packets. Advanced deep-packet inspection provides user identity and L7 application detail in classifying flows, enabling IT to apply access and QoS policies far beyond the virtual LAN/ACL controls that traditional L3/L4 switches support.

Intelligent switches with L7 deep-packet inspection and stateful flow analysis can correlate user, device, application, destination and other information to continuously monitor and control LAN traffic, which greatly simplifies troubleshooting, compliance, security provisioning and other IT tasks.

Stateful inspection savvy

Like a stateful firewall, a stateful switch holds in memory key attributes of each flow or connection, such as user identity, IP addresses and ports involved in the connection, application and underlying protocols and flows in use, and the specific content accessed. These attributes, which are referred to as the state of the connection, are maintained through the life of the flow and aid in policy enforcement and visualization.

The most CPU-intensive checking is performed at the connection setup, with subsequent packets monitored at rapid rates. Some intelligent switches also learn the user's identity — including username and organizational role — at connection setup, and tie this information to the source media access control and IP addresses. Consequently, IT can intelligently control traffic flows and maintain traffic logs based on username and role as well as the application type.

Many LAN devices attempt to glean application information by reading L4 details and deducing the application based on well-known port numbers. In contrast, an intelligent switch with stateful deep-packet inspection can be programmed to watch for unique application behavior.

For example, SSH follows a predictable pattern and can be identified regardless of the L4 port used, alerting IT that this encrypted traffic is going to external destinations over non-standard ports. Intelligent switches can distinguish between protocols that operate over Port 80, and understand different traffic types running over HTTP. L7 analysis can yield application detail such as the name of a file in use or the URL a user is attempting to reach. Achieving this level of intelligence requires a new switch architecture and operating system design.

Maintaining state is a processing-intensive task. Historically, firewalls have been the primary stateful network device. Operating at the WAN boundary to protect an organization from incoming traffic, a firewall's relatively slow throughput doesn't hamper network performance. Stateful inspection rarely occurred within the LAN because devices couldn't maintain gigabit throughput levels. The advent of multi-core processors, however, provides the horsepower a LAN switch needs to perform stateful deep packet inspection at speeds up to 10Gbps.

Multi-core processors allow for parallel processing on a single chip. While these devices have powered servers for years, they've only recently been designed into the forwarding engine of LAN switches. Several silicon manufacturers already build multi-core processors for switches, and some intelligent LAN switch vendors have developed custom multi-core packet processors.

This new silicon is powerful enough to see and log every flow from every user on the LAN, in contrast to sampling techniques such as NetFlow and S-Flow, which see roughly one in every thousand packets. As a result, an intelligent LAN switch can log every user access to servers and files, creating an audit trail to meet compliance requirements for regulations such as Payment Card Industry standards and the Health Insurance Portability and Accountability Act.

To take advantage of its multi-core design, an intelligent switch requires multi-threaded system software designed to drive the cores simultaneously. System software functions include per-flow decoding and applying policy dynamically to each user session.

In addition, vendors of intelligent switches often provide tools, such as a policy console and analysis engine, that streamline operations. From the console, IT can use simple language to define rules for which user or device is allowed access to what resources from where and when. These policies greatly simplify routine moves, adds and changes. Intelligent switches check each flow against policy and take the appropriate enforcement action, such as allow, deny, rate limit, or log the flow. The analysis engine then correlates flow information into actionable data for IT, such as displaying all users who have touched the finance server.

Benefits of intelligent control

Because of advances in processor and software design, LAN switches can perform stateful deep-packet inspection at gigabit speeds. As a result, IT has the insight into and intelligent control over LAN traffic that's needed in today's complex business environment, with its dynamic workforce, application proliferation and diverse endpoints — laptops, IP phones, PDAs, card readers, even robots.

Stateful deep-packet inspection enables intelligent switches to track LAN traffic by username, device and network addresses; associate users with organizational roles; identify applications; apply policies; and log all activity. Consequently, IT can direct policy down to the user level, and the LAN switch can granularly control traffic — even limit a flow's bandwidth.

Enterprises benefit from better protection of data and other assets, increased productivity and improved operational efficiency. For example, with full visibility into each traffic flow, IT has complete data for troubleshooting and auditing purposes. If the IP voice service isn't working, IT can pull up consolidated log information for that service. Similarly, if a user calls with a problem, IT can look up the username and see in human-readable language the applications and resources in use and any policies in effect.

With intelligent switches, troubleshooting is accelerated, which boosts user productivity and lowers operational costs. Stateful deep packet inspection truly brings intelligent control to LAN switches.

Prince is the founder and CTO of ConSentry Networks.

This vendor-written tech primer has been edited by Network World to eliminate product promotion, but readers should note it will likely favor the submitter's approach.

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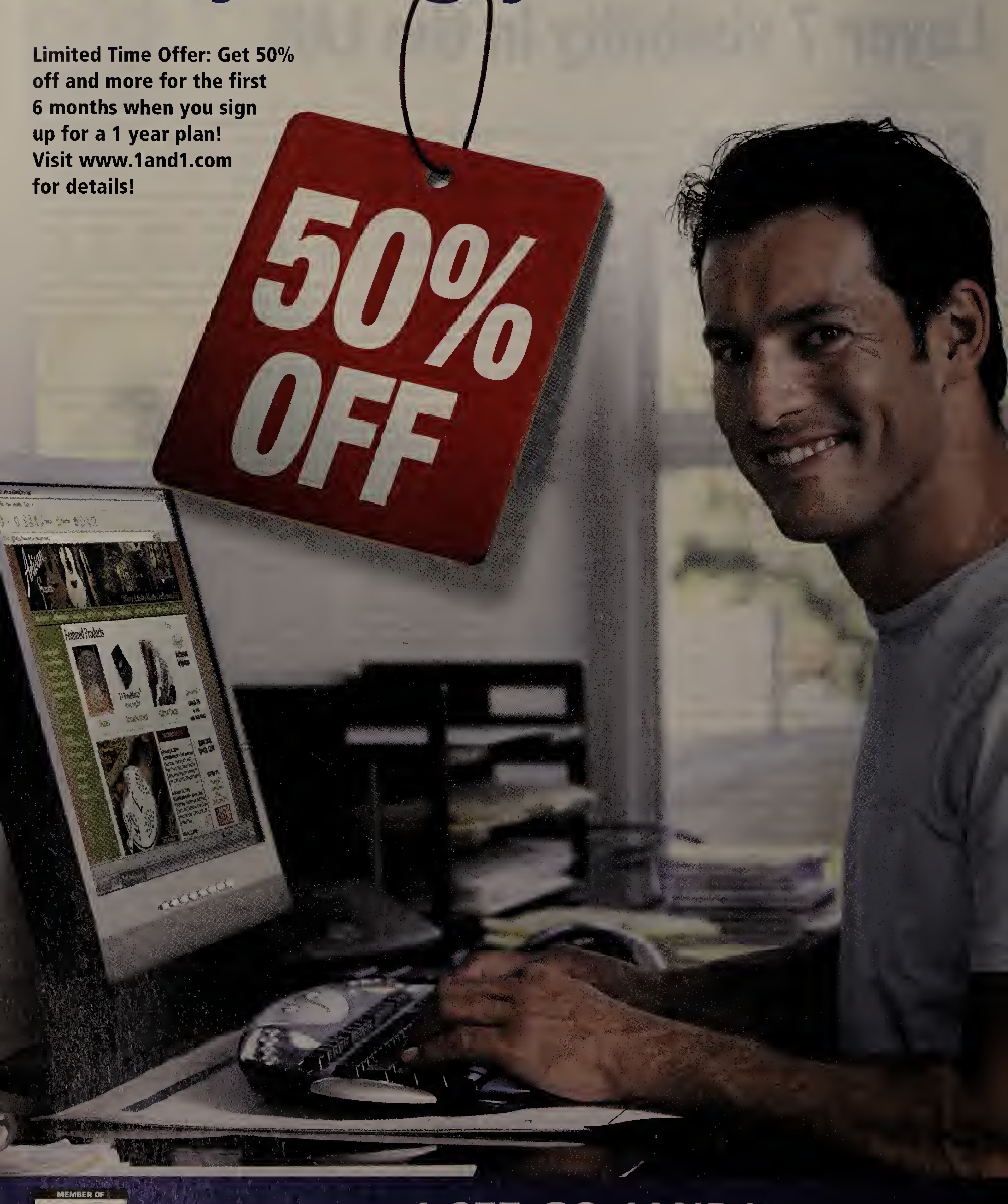

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GEARHEAD

Mark Gibbs

Generating regexes and Gmail filters

Before I launch into my main thrust (a word that must be pronounced with a rolling "r") I have to direct you to a work of near genius, txt2re, an online regular expression code generator.

If you aren't *au fait* with regular expressions (also called regexes or regexps), they are formal descriptions of searches to be conducted on sequences of characters (or "strings") by a regular expression processor, that is, a program designed to process "regexes".

Regex is useful for jobs such as mining server logs and searching data files and txt2re makes generating code in Perl, PHP, Python, Java, JavaScript, ColdFusion, C, C++, Ruby, VB, VBScript, J#.net, C#.net, C++.net or VB.net that perform these searches incredibly easy.

To use txt2re you give the service an example string and it shows you the substrings it recognizes and lets you select which ones you want to include in the output.

I did, however, say "near genius" as txt2re seems to have a bug that means the service doesn't always identify all of the "findable" substrings correctly. I was using txt2re to generate JavaScript code based on the following example entry in an Apache server access log:

```
192.168.10.11 - bob [16/Mar/2009:13:14:15 -0800] "GET /gibbs.gif HTTP/1.0" 200 5648
```

Txt2re failed to offer to treat the last digits in the string that show the data length as an integer — it only offered them as four individual digits, which would be useless if the data length was five digits long.

The solution was, oddly enough, to change the IP address in the example string to 1.1.1.1 and voila! I got the code I needed. Despite this bug, the concept is way cool and a little creative tweaking of either your example or the generated code will get you the code for exactly the regex search you need.

So now, onto my main thrust: I love Gmail. Yes, I know that there are potential problems because, as a free service, there's no guarantee that your e-mail won't vanish one day and you'll have no recourse and occasionally the service goes unavailable, but I've had those same problems with services I've paid for.

Quite some time ago I decided to drop my e-mail service provider, Everyone.net. I'd been using Everyone because the mail service that came with my Web service (hosted by EasyCGI) had no spam filtering.

I dropped Everyone because the company didn't provide support unless I was willing to spend more money, and I also realized I could use Gmail — which has very good spam filtering — for free. My kind of deal. Not only would this cure my spam problem for free but I'd also get excellent searching of my e-mail and could access it from anywhere, including from Outlook via IMAP.

I've now been happily using Gmail for more than a year and I have set up lots of filters to categorize the e-mail I receive. And when I say "lots" I'm not kidding — I have hundreds. My problem is I recently realized I have many filters that should be combined. The trouble is doing this through the Gmail filter page would be, to say the least, painful.

Turns out that on the "Labs" tab under Gmail's settings there's a new option that enables the export and import of filters in an XML format (when enabled, the import and export features are located at the bottom of the filters page). This is fantastically useful if you're going to move your filters to a new Gmail account. Now I need to figure out how to efficiently edit the exported filters, which will be the topic of a future column — suggestions will be welcomed.

Gibbs searches and filters in Ventura, Calif. Send your strings to gearhead@gibbs.com.

COOLTOOLS

A book-reading scanner; Kindle for iPhone

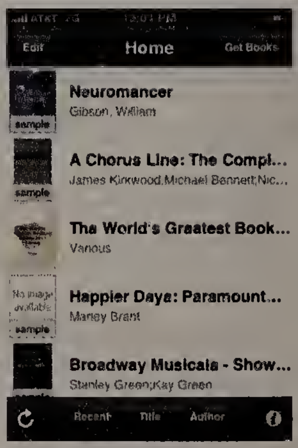
The scoop: BookReader V100 scanner, by Plustek, about $530.

What it is: A USB-connected flatbed scanner, the V100 offers 1200 by 1200 dpi scanning resolution, as well as optical character recognition software that converts printed text into a digital format. In addition, text-to-speech recognition software reads the digitally converted text back to you.

Why it's cool: The scanner is designed for visually impaired users who want to have their books or documents read to them. It was quite easy to use — I placed a book page on the scanner, pressed a button and the system and software took care of the rest. The V100 can scan in three different modes: plain text, a grayscale PDF scan or a color scan. I found the PDF scan the most accurate and book-like (the scanner takes an image scan and then the software converts the words). After the scan, you can listen to the page or convert the text file into a WAV or MP3 audio file, which can be transferred into an iPod or MP3 audio player.

Some caveats: Scanning books with many pages could be a tedious way for the visually impaired to listen to their books, considering other options available, such as audio books, Braille books or large-print offerings. The system is likely more convenient for scanning items such as e-mails or other one-page documents. Positioning a book on the flatbed to get the best possible scan was also a bit tricky. In the end, the value you place on the device will likely depend on how much you need it, and whether alternatives are available.

Grade: ★★★ (out of five).



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Reading books on the iPhone was better than on the Kindle.

The scoop: Kindle application for the iPhone, by Amazon, free download.

What it is: Amazon's application for the iPhone gives users access to its Kindle store of electronic books without the need to purchase a Kindle or Kindle 2 electronic book reader. The e-books are formatted to the iPhone's smaller display, and pages can be "turned" with a finger flick to the left or right.

Why it's cool: iPhone users who may be jealous of colleagues who gush about their Kindle can now join the e-book "revolution" just as much as their larger-device kin. I think reading the Kindle books on the iPhone is better than the Kindle (granted, I've only tried the original Kindle — I'm waiting for Amazon to send me the Kindle 2), because of the iPhone's brighter display. The smaller size of the iPhone makes it more comfortable — it feels like you're reading a paperback, and you can easily read a book with one hand, using your thumb to flip the pages. Despite my best efforts, reading with a Kindle device requires two hands. The smaller size lets you read in the same places you normally would read a book, such as in bed, and yes, the bathroom.

Some caveats: You can't buy Kindle books via the iPhone application — you have to first buy or get sample chapters through a regular Web browser and then the application downloads the books to your device the next time you open the app. Amazon says you can do this through the iPhone's Safari browser, but I preferred using the browser on my PC to do it. A second version where you can buy and download from the iPhone in one fell swoop would make it more convenient.

Grade: ★★★★

Shaw can be reached at kshaw@nww.com.

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MOBILITY

Users want to access enterprise applications from their mobile devices, most of which aren't enterprise-ready. There are four tests that mobile devices must pass before they get the corporate go-ahead: security, ease of use, management and battery life.

Is your mobile device ready for the enterprise? Four key criteria for picking a mobile device. (story at right)

Four ways vendors hinder enterprise mobility. **Page 24**

BlackBerry vs. iPhone: How they stack up in the enterprise. **Page 26**.

Mobility mandate shakes up enterprise IT. Users want access to corporate resources from any device at any time from any location. And IT needs to deliver. **Page 27**

5 tips for an effective mobility strategy. **Page 28**

BY JOANNE CUMMINGS

IS YOUR ENTERP

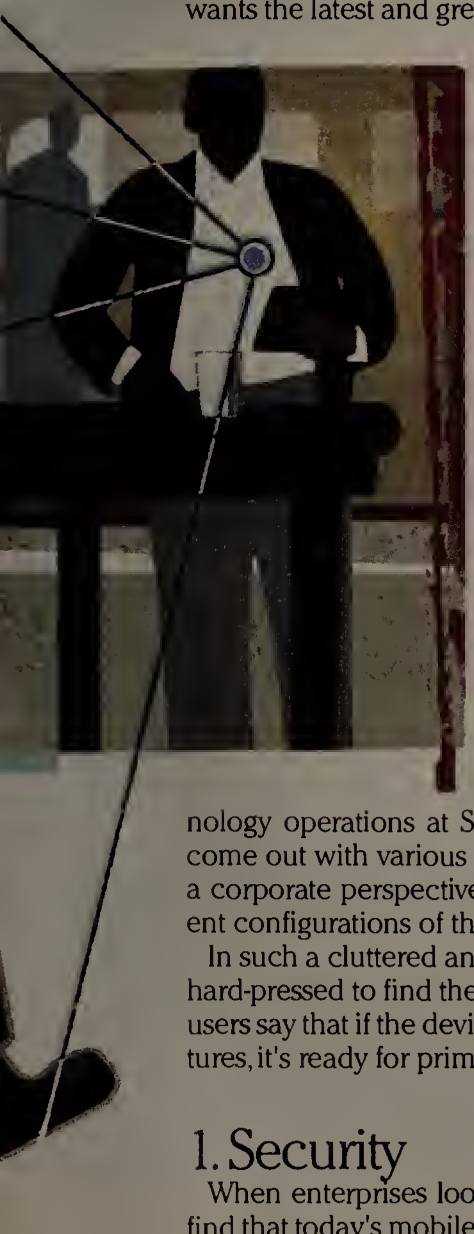
ILLUSTRATION MICK WIGGINS

MOBILE DEVICE ISE-READY?

Four key features separate the consumer-world wannabes from true enterprise-grade mobile devices

In the consumer-centric mobile device world, constant updates and cool features are the norm. But that's not what enterprises are looking for when they choose to standardize on a mobile device.

"The truth of the matter is, when it comes to gadgets, everyone wants the latest and greatest," says Stephen Stryker, a vice president at The Carlyle Group, a global private equity firm in Washington, D.C. "And there are lots of compelling reasons to go to something like an iPhone — at home, more people use Apple products like Macbooks or iPods, so it's a natural progression. For consumers, it's great. But the iPhone is not bulletproof from an enterprise standpoint."



Instead, when it comes to getting real work done, most organizations eschew the new and cool, and instead focus on security, stability and other not-so-flashy characteristics. This puts the enterprise at odds with the current mobile device marketplace, which seldom takes IT's concerns into account when designing and rolling out new mobiles.

"The carriers aren't so much interested in enterprises and what we need — they're focused more on just keeping up with one another," says Andrew Madejczyk, vice president of global technology operations at Sterling Infosystems in New York. "They all come out with various models every couple of months, and from a corporate perspective, that becomes difficult. How many different configurations of this one device do I need to support?"

In such a cluttered and varied mobile landscape, enterprises are hard-pressed to find the right mobile device for enterprise use. But users say that if the device you choose offers the following four features, it's ready for prime time in the enterprise.

1. Security

When enterprises look to standardize on a mobile device, they find that today's mobiles are fast becoming desktop replacements, in that they can handle most tasks — e-mail, phone, Web surfing and simple document editing — that in the past required a tethered desktop connection. And such capabilities mean high security risks should the mobile be lost or stolen.

"When we consider rolling out a mobile here, the security of the device is first and foremost," says David Reckles, CTO at Todobebe, a Spanish-language family entertainment company in Miami Beach, Fla. "Because if someone gets their hands on one of our mobile devices — we use BlackBerry here — they have instant access to all that person's contacts, e-mail, and the ability to send and receive e-mail as that person. And it could be at a CXO level, so that's a big risk."

The security features that enterprise users say are must-haves for today's mobiles include support of encryption, remote data wipe and remote lock-out, as well as strong password enforcement.

"That's the thing we love about BlackBerry is that when it's attached to the BlackBerry Enterprise Server [BES], we have the ability to do a remote wipe and remote lock," Reckles says. "The minute I learn a mobile has been lost or stolen, I can immediately make sure corporate data is not compromised, and that's key."

Todd Frantz, associate CTO at Florida Hospital in Orlando, agrees. "People do lose these things," he says. "So having remote wipe is important. Here, we give users a certain number of password tries, and then that's it, the device will just wipe itself."

Frantz has also standardized on BlackBerry and the BES at the hospital, both because of the remote lock and wipe capabilities of the BES server, and also because BlackBerry devices support encryption out of the box. While most of Frantz's users utilize the BlackBerry for just e-mail and voice, the hospital is subject to various compliance measures, such as the Health Insurance Portability and Accountability Act, which require strong security measures be in place.

"In our world, just doing e-mail, we may say we're doing a status review on Patients X, Y and Z," he says. "But once we've named the patients, that becomes a business-confidential e-mail and needs to have the same strong security around it as an e-mail created at the desktop. So encryption is important."

Enterprise users say the ability to enforce strong password protection on a mobile device also is of paramount importance. For example, Roy Balkus, CIO at Nutmeg Financial MHC in Naugatuck, Conn., says no mobile device is issued within the bank unless it's first password-protected, and that password needs to be strong, using alphanumeric and uppercase and lowercase letters. Unfortunately, that policy sometimes leads to problems for users.

"We make everyone change their password every 40 days, and I've had a couple of people who — because the password is blocked as you type it in, and because the password needs to be uppercase, lowercase, alphanumeric and special characters — they have trouble," Balkus says, noting that the bank supports Windows Mobile-based phones as well as a handful of iPhones. "Because you have to go to this dinky little keyboard on your phone and uppercase and lowercase are controlled by different keys, sometimes we have people who can't get in and we have to handle the password change for them, which isn't optimal."

Reckles at Todobebe also enforces passwords on all of the corporate mobile devices, but says the BES lets him be less rigid about strength.

"With the BES, you can ensure the password is alphanumeric, a certain length or force users to reset it every so often," he says. "But we want to make this as user-friendly an experience as we can, so passwords aren't difficult. We just encourage the user that if anything should happen to the device and it becomes unaccounted for that they quickly let us know. That lets us take the pain out of the user's hands but still make sure we have things covered on the back end" via remote wipe and lockout.

2. Centralized management

For the most part, new 3G mobiles such as the iPhone can meet the security test. For example, last March, Apple updated the iPhone software to support Microsoft's Exchange ActiveSync, providing IT administrators with the ability to set password policies and perform remote data wipe. Still, such capabilities require Exchange on the back end, and Apple provides no iPhone-centric management platform.

Users say that for now, the only two mobiles with enterprise-grade management are BlackBerry with its BES and Windows Mobile, with Microsoft's System Center Mobile Device Manager.

"BlackBerry with the BES is about the best you can do, but Microsoft with its Mobile Device Manager is coming on strong," Florida Hospital's Frantz says. "But the key is centralized management. If we can't manage it, we can't use it."

Experts agree. "BlackBerry was always designed to be enterprise-ready," says Mort Rosenthal, CEO at Enterprise Mobile, a Windows Mobile consultancy. "The BES has always been a critical element of the BlackBerry model, because with it, device management capabilities are built-in."

Windows Mobile also has built-in device management, he says. "With Windows Mobile, management is enabled both in the raw operating system as well as in device management tools like Exchange 2007 or System Center Mobile Device Manager," he says.

While most enterprises, such as Florida Hospital, Carlyle Group and Todobebe, rely on the BES for centralized mobile device management, some organizations are forced to rely on policy alone. For example, Nutmeg Financial uses a mix of iPhone and Windows Mobile devices, but does not have any kind of centralized management.

"With BlackBerry, you can do remote wipe and remote lockout, but you also have to buy the BlackBerry Enterprise Server, which is expensive," Balkus says. "And our iPhones

See Mobile, page 26

BY JOANNE CUMMINGS

FOUR WAYS VENDORS HINDER ENTERPRISE MOBILITY

A big problem for enterprises looking to deploy mobile devices is that many mobile device vendors are focused solely on the consumer market. But what works for consumers can quickly become unwieldy in a corporate environment. Here are four key ways vendors hinder enterprise mobile deployment:

1. Bizarre billing. Most carriers treat each employee as a separate consumer, leaving enterprises to wade through pages and pages of paper bills. "It's basically the 500-page stack of bills analogous to what you receive at home – each number has a bill associated with it," says Stephen Stryker, a vice president at the Carlyle Group in Washington, D.C.

Todd Frantz, associate CTO at Florida Hospital, concurs. "You should see the phone bills we get, it's incredible. We end up with a box of paper that's a foot high. From one of our carriers, our phone bill takes up two boxes."

A more helpful system would let enterprises customize bills so that employees can be placed in meaningful buckets (like accounting or sales). Another way to ease the problem is flat-rate pricing, in which some carriers let all employees share a predetermined number of minutes. "That way, if one user goes over, there are probably minutes available from others who are under, and that saves costs," Frantz says.

The key is to negotiate, says David Reckles, CTO at Todobebe. "The carriers won't come after you to help save you money," he says. "They only work with you when you call to say you're disconnecting the service because it's too expensive."

2. Frequent fingerpointing. With mobile devices, enterprises need to deal with several vendors at once – the carrier, the device maker, the operating system maker, the application maker – in order to get things to work properly. "There's the whole complexity of dealing with different OEMs, operating systems, carriers, application providers, and they don't all play together perfectly," says Mort Rosenthal, CEO of Enterprise Mobile. "It would be nice if enterprises could get that one throat to choke, but that's not how things are set up."

He advises users to contract with a consulting firm to handle the middleman problems. "The situation is bad for enterprises looking to roll out mobiles, but it's good news for us, because you really need that middleman to solve the problems."

3. Constant change. Carriers are constantly changing the devices they support and the network itself, leaving many enterprises struggling to support multiple devices and feature sets. "I can go to an AT&T store every month and buy the same device, but I can virtually guarantee you that the builds of those three devices will be different," Enterprise Mobile's Rosenthal says. "In most instances, that doesn't matter at all. It may be a change to the radio stack or to Bluetooth. But every once in a while, it causes a problem, and you have no way of tracking it."

He says his firm standardized on a Windows Mobile build, only to find that a key application stopped working one day. Rosenthal tracked the problem to an upgrade the carrier made to the network. "At first, the carrier denied it was them, but eventually, they admitted it, because it was a big problem. But it took a while," he says.

4. Crazy contracts. Typical consumer contracts run for two years and usually come with a hefty subsidy for the mobile device. While that serves to lock consumers in while keeping them happy via the latest and greatest devices, it's not what enterprises need. Users say that rather than going with lengthier contracts to get less-expensive devices, enterprises should purchase the devices outright and then negotiate for the best contract deals they can get.

"If you do the math, you're probably ahead that way because you have other benefits and can negotiate a better price for the service if you're not asking for a subsidy," Rosenthal says. "But today, it's hard work for enterprises."

Todobebe's Reckles agrees. "You should never sign a deal for more than a year, even if they offer you larger discounts," he says. "Because technology changes too quickly and it's most likely the cost will go down, not up."

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Mobile, continued from page 24

can't even be managed centrally right now. So we cover it with policy. We tell our users they can't store customer information on the device and they have to make sure it's password-protected. And if they lose it, they have to tell me right away."

Todobebe's Reckles agrees that the BES can be expensive to purchase and administer, but says his company chose to go with a third party, AppRiver, which provides Todobebe with hosted Exchange and BES services at a cost of about $10 per user per month. "The true TCO [total cost of ownership] isn't what the device costs, it's what it costs plus support. With App River, all my support is built in, so controlling the cost around support isn't an issue."

3. Ease of use

Another key issue for enterprise mobiles is ease of use. And for many, this is a big stumbling block for newer mobiles such as the iPhone.

"One thing about the BlackBerry is when you give it to end users, it works right out of the box," Carlyle Group's Stryker says. "There aren't any real challenges around configuring it. But the iPhone has Wi-Fi settings you can muck with, how you sync can be mucked with, and it lets them download different apps, so there's greater risk that people can work themselves into a corner. From a support perspective, it opens a lot of challenges."

Stryker says ease of use is also a downside of Windows Mobile. "Windows is just hard to use in a small form factor and it's hard to train people," he says. "Microsoft's poured a lot of functionality into it from the Windows OS, and that sounds nice on paper. People always want Word, Excel or PowerPoint on their mobile device, but it never really pans out. Once they start to use it, it's just too difficult."

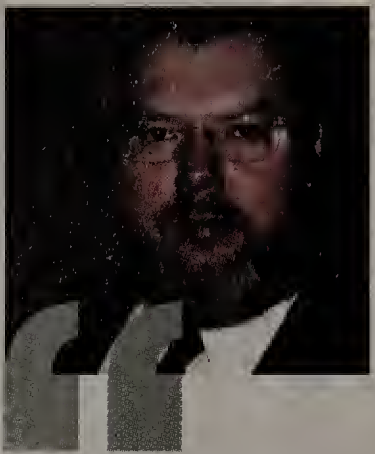
Newer touchscreen interfaces are another downside, because users have trouble transitioning from a traditional keyboard or keypad to an onscreen version. "It takes me twice as long to type an e-mail on an iPhone as it does on my BlackBerry," Sterling InfoSystems' Madejczyk says.

Enterprise Mobile's Rosenthal agrees. "In most cases, you have to trade off interface coolness for speed and performance," he says. "I have a lot of contacts, and when I've tried popular cool devices, they can't handle my contacts. I search for a name and it takes literally a minute. So it may be cool, but it doesn't work."

4. Battery life

The last key enterprise mobile consideration, battery life, is often overlooked. But constantly having to recharge a mobile device can be a big productivity hit on an enterprise.

"In our organization, people don't travel with laptops. They just bring their BlackBerries, so long battery life is key," Stryker says. "And that's one area where BlackBerry shines over other devices."



"People do lose these things. So having remote wipe is important. Here, we give users a certain number of password tries, and then that's it, the device will just wipe itself."

TODD FRANTZ, ASSOCIATE CTO FLORIDA HOSPITAL, ORLANDO

Florida Hospital's Frantz agrees, noting that battery life is the main pitfall for newer devices such as the iPhones. He says he charges his BlackBerry every day, but has some users who can go as many as four days on a single battery charge. "But with the iPhone, you can set it for Wi-Fi access, which people like because it's usually faster than the cellular network. But once you turn on Wi-Fi, it becomes very energy-intensive," he says. "If you get eight or 10 hours out of your normal battery life, and you turn on Wi-Fi, even if you don't use it, you now probably get three hours of battery life. And that's not acceptable."

Frantz says he would like to see energy-intensive mobile devices that support Wi-Fi be engineered more like his Vocera push-to-talk phones. Those phones come with easily removed batteries that can be placed in a 24-battery charging unit when needed.

"With the Vocera, when your battery is getting low, you run up to the battery recharger, grab one that's charged, drop your dead one in that slot and away you go," he says. "It has a teeny tiny internal battery that's good for about two minutes while you're doing the swapping."

By contrast, not only is the iPhone's battery difficult to remove, Apple stipulates that users return the whole phone to the company should they need to replace the battery. "That's crazy," Frantz says.

Enterprise grade mobiles few and far between

When it comes to mobile devices in the enterprises, good fits are difficult to come by. Users say the key is to focus less on the individual feature set — whether the phone supports some new application or can play music downloaded from iTunes — and more on how well the mobile integrates into the enterprise in terms of ease of security, management, use and functionality.

"There are all kinds of devices out there, and almost every one will let you e-mail, make a phone call or surf the Web," Frantz says. "But it's not really a device question because it takes more than just the device to make it workable. RIM has the BES, Microsoft has their Device Manager software — those are the more important things we look for."

BlackBerry vs. iPhone: HOW THEY STACK UP IN THE ENTERPRISE

ENTERPRISE NEED	BlackBerry	iPhone
Ease of typing	✓ Keyboard designed for easy typing, quick communications	☐ Touchscreen is difficult to get used to, less enterprise-friendly
E-mail	✓ Push e-mail increases productivity	☐ Pull e-mail is not as efficient
Battery life	✓ Best in class, usually more than 24 hours	☐ Acceptable at eight hours, until Wi-Fi is enabled (can be as low as three hours)
Robustness	✓ Built to be dropped, shrugs off most accidents	☐ More fragile, tends to break easily when dropped
Web surfing	☐ Can be awkward, depending on model	✓ Very PC-like and easy to use
Document editing	☐ Difficult to decipher formatting	✓ Formats just like a PC, although lack of cut-and-paste is a down side
Appearance	☐ Considered stodgy and staid in today's business world	✓ A real status symbol

BY ANN BEDNARZ

HOW TO SOLVE THE MOBILITY PUZZLE

Virtualization, SOA, security, management and network access must be part of a comprehensive mobility strategy

■ IT budgets are tight and some projects are in limbo, but there's one area Dave Rudzinsky isn't cutting back: mobility.

"Our mobility project is one that hasn't skipped a beat," says Rudzinsky, senior vice president and CIO at Hologic, a $1.6 billion medical devices company specializing in women's healthcare. "We've got to do more mobility because we want our guys to be able to work wherever they are, and keep our systems going."

Hologic has nearly 4,000 employees, and 1,500 of them require mobile access at least part of the time. Field service and sales teams in particular require tools to work on the road, so Hologic outfitted them with BlackBerry devices running Oracle CRM applications.

The CRM deployments are one aspect of Hologic's master mobile plan. The Bedford, Mass., company has a mobility strategy in place that covers everything from device options and service plans to usage policies and mobile application development. But most companies fall short of having a mobility master plan.

"Most companies are approaching mobility in a very tactical way, unfortunately," says Paul DeBeasi, senior analyst at Burton Group. "Mobile technology is changing so fast, and the expectations of new workers are changing so fast, but enterprises have not organized themselves to really be able to deal with any of this. There's no strategic view on how to integrate mobility in the enterprise."

That lack of strong policies leaves the door open to a mix of smartphones and handheld devices with different capabilities, operating systems and network technologies. As these devices pop up unannounced in corporate environments, IT's efforts to secure and manage corporate resources get more tricky.

Today's handheld devices are becoming almost as powerful as laptops, but

"Now is the time when businesses have to find ways to do things better. Mobility is a way that we can do things better."

DAVE RUDZINSKY, SENIOR VICE PRESIDENT AND CIO, HOLOGIC

KEVIN KONIKOWSKI

"people are much more rigorous about managing their laptops than they currently are with their handheld devices," DeBeasi says. Two-factor authentication, encryption and VPNs are common on laptops, for instance, yet many handheld devices don't require any authentication to access the device or network, and local encryption on a handheld is possible, but not often implemented. "Where we are with mitigating against data leakage on handhelds has a long way to go to catch up to laptops," DeBeasi says. "That's one of the big risks here."

The way some see it, not having a mobility strategy is not only risky, but also a lost opportunity to refine existing security, application and management infrastructures. "If you, the enterprise, come up with a mobility strategy for IT, you're basically addressing all of your IT needs going forward, including in the office. Because even in the office, people are mobile now," says Craig Mathias, principal at Farpoint Group. "If you solve your mobility strategy, you're solving your overall IT strategy."

Beyond e-mail; deploying business apps

Road warriors these days are looking to do more with their smartphones, and enterprises are beginning to assess which applications make sense to enable on handheld devices. Most companies start with e-mail and calendar-related tools, and more than 50% of organizations have fully deployed these commodity applications, says Chris Silva, an analyst with Forrester Research.

The next priority for many businesses is deploying applications that feed structured data and collateral information to workers, such as sales and inventory applications. But mobility gets more interesting when enterprises look to deploy applications that enable employees to actually conduct business: Feeding market analytics to an investment banker, or enabling an underwriting process for a loan officer in the field, for example. When employees can conduct business, or initiate workflow back at the home office through a mobile device, that's revenue-generating activity, says Todd Christy, president and CTO at mobile application specialist Pyxis Mobile.

Such projects are starting to appear on forward-thinking companies' mobility agendas. "Over the last year or so, the level of sophistication from the buyer's side — the questions that they ask, the problems that they're trying to solve, and the breadth of their mobile objectives — has gotten much more advanced," Christy says.

At Hologic, IT deployed salesforce automation software from Oracle onto user BlackBerries, which not only makes sales staff more effective, but also provides a tool for management. "From a management perspective, it's allowing us to keep track of valuable sales and market information so that we can manage the business better. And if we have salesforce turnover, we don't lose that intelligence" Rudzinsky says.

> Companies need to ask, 'Is this really the thing that's going to give us the edge we need? Are we doing it in the most cost-effective way?'"
>
> **CRAIG MATHIAS, PRINCIPAL AT FARPOINT GROUP.**

Oracle's field service application, meanwhile, lets engineers provide closeout information for service calls — such as parts used, time spent and resolution — using their handheld devices, which speeds follow-on processes such as billing, Rudzinsky says.

Deployment options

Of course, choosing which applications are best suited for mobile employees' handheld devices is only part of the

See Enterprise, page 30

BY ANN BEDNARZ

5 TIPS FOR AN EFFECTIVE MOBILITY STRATEGY

Once upon a time, the IT team at a large U.S. healthcare institution got a call from the shipping department saying that several cases of Wi-Fi-enabled devices had arrived on the loading dock. IT knew nothing of the shipment, because the devices had been ordered by nursing administrators. That rogue purchase is an extreme – but true – example of what can happen when companies don't have a clearly articulated mobility strategy. Here are five steps toward an effective mobility strategy.

1. Define requirements.

"Understanding how the workforce needs to work – not only how they want to work, but also how they should be working, based on job functions and responsibility – is a remarkable way to make crystal clear what the mobility requirements should be for that organization," says Ben Gibson, senior director of mobility solutions at Cisco.

2. Be selective when planning and prioritizing mobility projects.

"Companies need to ask, 'Is this really the thing that's going to give us the edge we need? Are we doing it in the most cost-effective way?'" says Farpoint Group's Mathias.

3. Establish who's in charge.

Forrester Research analyst Chris Silva recommends designating a mobile operations professional who can coordinate and align efforts related to device management, security, mobile application development, carrier relationships and mobile network deployments.

"You're likely not going to find one person who is your RF engineer/network architect/mobile device management guru, but at least designate someone who can sit at the top of a pyramid organization and has some familiarity with the different domains," Silva says.

4. Commit to documenting mobility policies.

"People need to spend time and energy getting the right people to write these policies, review them, approve them and educate the employees. Then they have to get the technology in place. It's a multiyear effort, but companies have to understand that it's strategically important to them," Burton Group's DeBeasi says.

5. Constantly evaluate your mobility projects.

"The technology continues to evolve at a fairly rapid rate," Mathias says. "If you're in the middle of a multiyear implementation of something, by year two you may need to go back and look at whether or not what you're doing is still optimal. Is it still the best thing for you?" Some companies already do such things: They've established cross-functional teams that produce policies, which are enforced enterprise-wide. Some are using standards such as ITIL to formulate their management policies and procedures for mobility, DeBeasi says.

For the rest, a rude awakening could be in store. "Something is going to shake people up. They'll either be motivated to be more centrally controlled about mobility because they want to lower expenses, or some kind of security breach will cause them to get more organized about this," he says.

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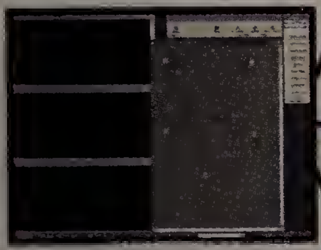

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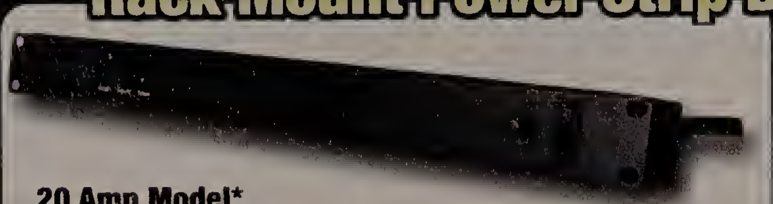

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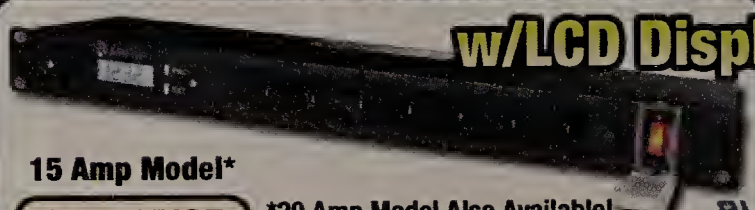

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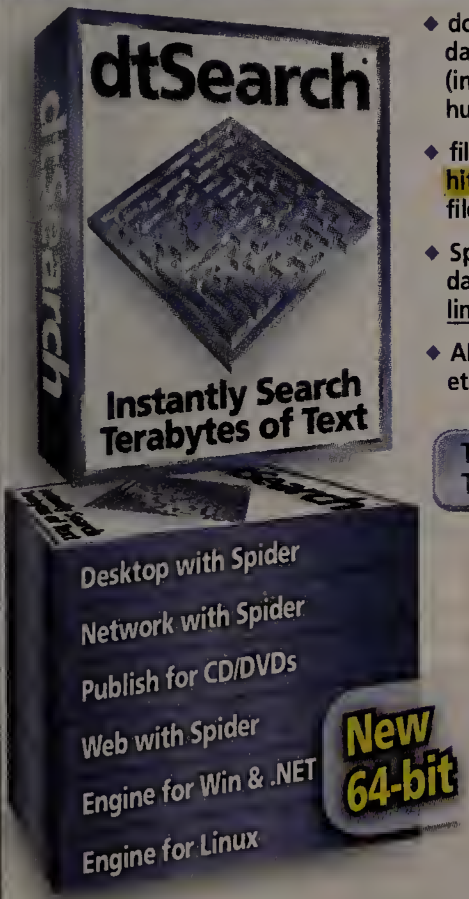

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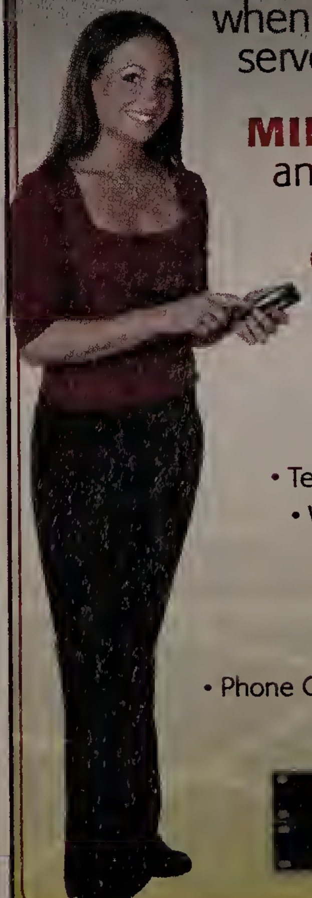

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effort. Deploying them is a whole other issue.

In terms of application architecture, there are a few different approaches companies can take, each with upsides and downsides. A company can wait for, say, SAP or Oracle to introduce a mobile version of a specific application, but then the enterprise is at the mercy of the vendor in terms of delivery and platform support, Forrester's Silva says.

Enterprises also can opt to adapt an application to their mobile environment, but then IT winds up managing two applications, a desktop and a mobile version.

Specialty vendors such as Antenna Software, Pyxis and Sybase are another option, offering application platforms designed for handheld devices. "Now you have a purpose-built application that is designed from the ground up for mobile devices, but it's another application to manage, another license to manage, another piece of software to support," Silva says.

Hologic went the middleware route, choosing Antenna Software. However, Rudzinsky admits he initially wasn't sold on the approach. "I wanted fewer moving parts, not more moving parts," he recalls. But Antenna's ability to simplify the user interface and to port PC-designed processes to a handheld won him over. "I'm hooked on it now."

It's a trend Gartner sees continuing. The research firm predicts that by 2010, 50% of enterprises will have migrated away from tactical mobile application silos (supporting a single application) to strategic platforms that can support multiple applications, manage devices, and secure data and transport.

Industry experts say the migration is a necessity.

"A lot of mobile applications over the last several years have been custom, one-to-one apps — meaning one device type talking to one system," says Jim Hemmer, president and CEO of Antenna Software. "But with the proliferation of devices throughout the enterprise, the IT organization has had to step back and take a more strategic role."

"While they may only be deploying an application for their field service organization today, they know that tomorrow it's going to be the help desk, and the next day it's going to be somewhere in the supply chain," Hemmer says. "Companies need a central way to design, build and then deploy these applications, and then manage them as well."

How SOA, virtualization fit in

Third-party middleware isn't the only option for supporting multiple mobile applications on a common infrastructure, however. Farpoint's Mathias advocates a service-oriented architecture (SOA) approach, so reusable application components can be exposed as services without being tied to any specific user interface.

"Porting applications to individual handsets, individual platforms, is ferociously expensive. You shouldn't have to do it," Mathias says. If you deploy mobile applications in a Web services environment "all you'll worry about is provisioning your applications within the Web services metaphor. You don't care if the network is wired or wireless, you don't care if the client is a notebook or a handheld."

Marking an even more dramatic departure from yesteryear's fat-client architecture is the notion of using virtualization technology on handhelds. Enterprises today are using virtualization technology on laptops, Burton Group's DeBeasi says.

"In this particular context, virtualization is the ability to have the operating environment of the laptop virtualized such that the applications reside in the data center," DeBeasi says. "A laptop user can connect to the network, have a small kernel loaded on the laptop, and run their desktop environment right there. When they're done logging out, all remnants of what they just did get wiped away."

A virtualized desktop can offer greater security, because data isn't stored on the device, as well as business continuity and desktop management gains —advantages that could carry over to the world of handhelds. In theory, a mobile hypervisor could abstract applications and data from the hardware, so developers could deploy the same application on multiple devices, regardless of underlying differences in mobile operating systems.

It's an emerging approach, fueled by VMware's launch in November of a hypervisor for mobile phones. The company says it is working with mobile phone makers to embed its virtualization technology directly onto smartphones, and that the first such phones could be available by late 2009 or early 2010.

But convincing device makers to embrace the idea may not be easy. "It will be interesting to see if that actually takes hold," DeBeasi says.

Don't forget network access

Another element of enterprise mobility is the network: Having many application options on a handheld device won't amount to much if users can't connect. Even as service providers lay plans for faster cellular networks with better coverage, availability remains a challenge, Mathias says. Dual-mode phones can help bridge the gap, offering Wi-Fi access when cellular networks fail. "By 2012 we think well over 40% of handsets sold will have Wi-Fi built in," he says.

For enterprises, these devices offer new challenges and opportunities.

"The No. 1 challenge we hear from our customers is that, to date, the network that allows an individual to be mobile has always been siloed. Either it's a public, cellular-based network or it's an on-premise, within-the-business-walls network, typically pervasive wireless LANs," says Ben Gibson, senior director of mobility solutions at Cisco.

The idea of bringing those public and private wireless networks together, to enable not only converging services but also seamless roaming between networks, raises key infrastructure considerations for enterprises.

For starters, enterprises need a network that's ready for a massive influx of Wi-Fi-enabled devices, Gibson says. "Wi-Fi has been widely adopted, but not too many businesses have truly pervasive wireless LANs within their organizations today."

Bridging private WLANs and a public cellular network requires an investment as well. Cisco is among a handful of vendors (along with Avaya, Agito Networks, DiVitas Networks, NEC, Tango Networks and Siemens) offering a platform for fixed-mobile convergence. The idea behind FMC is that a mobile device can use either a Wi-Fi or cellular connection, and automatically shift between them, and make use of enterprise PBX functions such as directory capabilities and extension-based dialing.

Fresh-produce distributor Anthony Marano Company is an early adopter of FMC. Keeping its salesforce of 50 connected is key to its business operations, and cellular coverage is unreliable in its facilities.

"We buy and sell fruits and vegetables and we take physical delivery of them by truckload here in Chicago, then we sell them by the case or by the pallet. The vast majority of our business depends on same-day shipment," says Christopher Nowak, CTO at Anthony Marano Company.

When buyers and sellers miss calls, business suffers. "If we can reduce that element, then hopefully we're catching deals from vendors and customers a little bit faster and being a little bit more responsive," Nowak says. "That helps us operationally."

The Chicago company is using a Session Initiation Protocol-based RoamAnywhere Mobility Router from start-up Agito Networks and Nokia dual-mode smartphones. In addition, staff who need in-building cellular coverage but don't require PBX functionality are using an Unlicensed Mobile Access service from T-Mobile that tunnels GSM calls through WLANs.

FMC is a fit for Anthony Marano Company because it enables more seamless business processes. That's what makes a good mobility project, even when times are tough and IT budgets are strapped, experts say.

"Now is the time when businesses have to find ways to do things better," Hologic's Rudzinsky says. "Mobility is a way that we can do things better, offer a better process to serve our customers and to save money for the company."

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office space.

"The only places you can very accurately measure it are where you have stand-alone, purpose-built data centers," Carney says. In one such data center in Texas, Carney says Citi has achieved average PUE ratings of 1.58 to 1.62.

The keys for Carney include partnering with the company's real estate organization, using energy management software and control systems that track power entering all points of the data center, and using all the data to optimize cooling temperatures.

"People look at watts per square foot. They look at chilled water temperature. PUE gives a pretty holistic view of what's going on in the entire environment," Carney says. "We also like to measure [power usage] at the cabinet level and different areas of the data center floor."

While PUE is useful for measuring how power usage at an individual data center changes over time, public claims of incredibly low PUE ratings can't always be believed.

According to Brill, one company claimed to have a PUE of 0.9, which is impossible because that would mean its servers use more power than is actually delivered to them. The company said its use of solar power and windmills shouldn't count toward power usage, Brill says. Some companies might skew ratings by measuring UPS but not other power sources, or by measuring only during the cooler portions of the year, rather than calculating an average across 12 months, he says.

Meanwhile, Google has claimed an average PUE of 1.21 across six data centers, and the most efficient of the six had an annual rating of 1.15 and a best quarterly rating of 1.13. If the numbers are accurate, only about two-tenths of a watt (for every watt of IT power) is needed to cool Google's servers and distribute power to IT equipment.

But how meaningful are Google's measures to your standard enterprise with just a few data centers? If one Google data center fails, it has many others to pick up the slack. But if a company has a data center that must remain online at all times, lowering the PUE might require sacrificing redundant power supplies that maintain required uptime, Brill says.

Enterprises that want to measure PUE or analyze the energy consumption of individual devices have several options. Vendors such as GDCM, Server Technology and Sentilla offer software products that measure and analyze power usage in the data center. Such tools can help reorganize IT loads to maximize power efficiency, or use chargeback to bill departments for their energy usage.

PUE, if not perfect, helps companies understand how IT load changes affect power usage, says Calvin Nicholson, director of product marketing for Server Technology.

"There's a lot of hype" around PUE, he says. "But it's simple, it's easy for people to understand, and it makes sense." ■

The H-1B hiring hassle

BY DENISE DUBIE

The U.S. H-1B visa program continues to cause controversy as new government restrictions make securing a foreign national for employment at an American company more difficult than ever.

The H-1B Specialty Occupation Visa program, long the subject of debate among high-tech companies and U.S. lawmakers, allows American companies to hire foreign nationals with skills not easily found within the country. The program applies to industries other than IT, such as education, science and medicine, but public debates featuring Bill Gates tend to associate the program more with high-tech workers. The program is capped at 65,000 visas and 20,000 exemption filings for recipients of a graduate degree from a U.S. university, with an upcoming April 1 deadline for 2010 applicants.

But this year in the midst of the worst economic recession in decades and in response to President Obama's stimulus plan, U.S. lawmakers are adding to what some say is already a substantial list of requirements for potential H-1B hires. For instance, a provision to the stimulus package would restrict H-1B hiring at companies that have received funds from the Trouble Assets Relief Program (TARP) and that have more than 15% of their workers on visas; these companies would be required to prove they have diligently recruited American workers for the position and that in hiring a foreign national they are not replacing a U.S. citizen. Yet for companies currently employing foreign nationals that aren't considered "H-1B-dependent" (those with more than 15% of their staff on visas), the process might not change much.

The controversy is around U.S. high-tech companies that are laying off workers, but aren't necessarily cutting H-1B visa holders or foreign nationals ahead of U.S. employees, says Peter Roberts, partner at corporate immigration law firm McCarter & English. "Legally there is no requirement one way or the other if they hire U.S. or don't hire H-1B or terminate H-1Bs first. But some issues could arise with TARP funds and new hires; that is yet to be cleared up completely."

While it is still being fleshed out in full, there is a provision that involves restricting employers from hiring an H-1B visa worker if the company has had layoffs 90 days either prior to or following the hire. That means many companies may reconsider looking at foreign nationals for U.S. positions, which has two potential negative implications, Roberts says. For one, foreign nationals might not continue to view American universities as an option if there is less chance of them finding work after graduation. Secondly, business owners could be challenged to find and hire the skills they feel they need to stay competitive with many restrictions put upon their employment choices.

"This is a tough issue all around, and no one is happy about it. But if the U.S. starts taking away opportunities for foreign nationals, our public universities and school systems will feel that impact. Lawmakers need to be aware of that potential consequence," Roberts says.

As for business leaders hoping to match needed skills to potential candidates, Roberts says many will move the possibility of an H-1B hire off the top of their list. He says an informal poll by the American Immigration Lawyers Association (AILA) revealed that fewer clients of those legal members plan to seek new H-1B visas for the upcoming 2010 cap. (The AILA has not released the poll results publicly.)

"I don't see anyone going out of their way to pay more than $3,000 in filing fees and premium processing during this economy considering the added restrictions," Roberts says. "I am not talking about those that abuse the program, but the good companies that are trying to stay competitive or even stay in business will have one less option." ■

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BACKSPIN
Mark Gibbs

Keeping IT honest

Just over a week ago Forrester Research posted a blog item titled "Sponsored Conversations: When it's OK to pay bloggers to post."

In Forrester's opinion paying someone to blog about you or your company is acceptable — I presume they mean ethically acceptable as opposed to simply being a safe business practice — if two criteria are met. First, when it is publicly admitted that the blogger is being paid by the entity they are writing about and, second, the blogger is honest in expressing his real opinions.

This sounds reasonable but I have to disagree. Once you pay someone to write about you it is impossible for that person to be objective. Look at it this way: If the author doesn't like the products of the company writing his check and says so publicly it is going to be a very short contract (this is pretty obvious because what would be the point of paying for bad press).

On the other hand, if the blogger is positive about whatever he's writing about, then it will always be assumed by the majority that the author is not objective and is biased in favor of the client. There is no way out of this. Moreover, even if he is occasionally negative the implication of bias will still be there from the positive stuff he wrote.

In fact, I'd go so far as to say that any blogger, tweeter or columnist who publishes paid-for content under his own name would have to be brain dead or at the very least making a huge mistake. He will be flushing away any credibility he might have even if he is truly being as honest and objective as he can possibly be.

For example, if I was to write a review in Gearhead about a product from the XYZ company and there was a disclosure somewhere in the piece that said "This column is underwritten by XYZ company", would what I actually wrote matter? Wouldn't you suspect my motives?

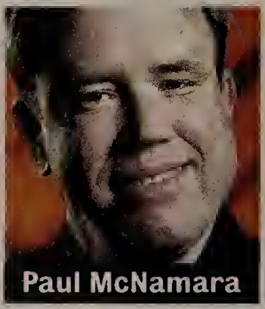
Given that the column was paid for it's unlikely I would be able to say the company's product or service was no good unless the XYZ company had completely lost its mind and its lawyers. So, if I were to say the product was really good then you would quite rightly be suspicious. And if I were to say the product was "OK, but ..." you would still probably be suspicious. There's no way to win because my objectivity would be compromised by the implications of taking money.

So, if your organization is considering paying bloggers or Twitters or any other social media producer to get coverage, make sure you speak up and tell them it's a really bad idea. If that fails, get in touch with me and we'll do a conference call with them.

This leads, slightly tangentially, to another honesty issue I've been wondering about: You work for a large company. You know what your company is up to and have access to the raw data. So, tell me:

1. If you were to suspect that something dubious was going on, in what situations would you actually look for evidence, even if it meant violating your internal security policy?
2. Let's say you find evidence of serious wrongdoing (whether you had to look for it or it was just sitting there) and whistle blowing might cost you your job, how serious would the malfeasance have to be for you to risk your employment?
3. If you knew that whistle blowing wouldn't cost you your job but your co-workers would shun you as a consequence, would you do it?
4. If the malfeasance could destroy the company, would you do it?

Gibbs awaits your responses in Ventura, Calif. Please don't disappoint him at backspin@gibbs.com. And don't forget to follow him on Twitter — @quistuipater.



NETBUZZ
News, Insights, oddities

Google's new 'Tip Jar' offers small change

The notion is to harness that ballyhooed wisdom of the Internet crowds in order to help us all save money in our everyday lives.

From The Official Google Blog: "Tip Jar gathers tips in one place and invites people to rank them in order of usefulness and even add their own tips to the list. Over time, the best and most useful tips will rise to the top."

Over time might be the key phrase there.

It's a cool concept, so I thought it would be worth my while to breeze through the top tips offered in each of the site's eight categories. In one sense, I knew this was unfair, given that Tip Jar had just launched, but Google did ask me to take a look … and this is what I found as the top one or two in each of the eight.

Category: At home.

"Get your books from the library. It's hard to beat free."

"Turn off the lights in the rooms of your house that you are not occupying. Make it a habit to flip the switch each time you leave a room. Save electricity and save on your bill."

Thanks, Tip Jar. I hadn't heard of this "library" thing and I'm sure my kids will love to make a game out of turning off lights.

Category: At work.

"Bring your lunch to work once or twice a week instead of buying it."

"Live relatively near your workplace. While this isn't always possible, driving 5,000 miles less a year can lower transportation costs by more than $1,000."

Thanks, Tip Jar. Are lunchboxes still cool?

Category: Finance.

"Utilize online bill pay with your bank. It keeps you in much closer contact with your money, as you can keep a very close eye on your balance and be in much less danger of overdrafting. It saves you money on stamps and paper checks."

Thanks, Tip Jar. Who would have thought you could use the Internet to pay bills?

Category: Kids and family.

"Don't spend big money entertaining your children. Buy them an end roll of newspaper from your local paper."

Thanks, Tip Jar. That one has the added benefit of saving a dying industry. Win-win.

Category: Shopping.

"Buy a water filter and take your own water to the gym/sports etc. Bottled water is expensive and bad for the environment"

"Go to the grocery store with your belly full. You won't buy too many things because you just ain't hungry."

Thanks, Tip Jar, but I have a better idea: Drink a gallon of tap water before going for groceries.

Category: Food.

"Drink water. Often we drink lots of calories through sodas, coffee, alcohol, juices, tea, etc. And that costs a lot too. Drink water, save money, save calories."

Thanks, Tip Jar. Is there any challenge that can't be met with a glass of tap water?

Category: Cars and transit.

"Carpool. Is there anyone that lives near you who works at the same place (or near the same place) that you do?"

"Keep your car engine tuned and its tires inflated to their proper pressure. Doing both can save you up to $100 a year in gas."

Thanks, Tip Jar. This is the way I'll go if I can't find a job nearer to my house.

Category: Travel.

"Make sure the kids know that the mini bar is not an option. Buy snacks and beverages from a local market and keep them in the room for snack attacks."

Thanks, Tip Jar. No more giving the mini-bar key to the kids.

Definitely unfair, you say? Fine, I'll give Tip Jar more time.

Tips and comments to buzz@nww.com and on Twitter: @Buzzblog.

SAL'S POINT OF VIEW

The Real Stuff.

Financial services firms like ours are very dependent on the use of email and Web connectivity to conduct our business. As the Director of information technology I have to make the security of those channels my top priority.

And as the use of the domain name system to conduct attacks, steal data and interrupt business has increased, so has our need to monitor our communication channels. In this new environment, using standard command line tools to detect and fix critical problems, particularly in a crisis, is no longer an option. It's time consuming and costly. And frankly, that's time I don't have and a cost my firm can't afford. Like any smart IT guy I look for the most efficient solution to solve a problem. That's why I absolutely depend on DNSstuff to stay on top of my domain management responsibilities and fix a DNS problem fast in a crisis. DNSstuff is rock solid and reliable; an every day tool that I can't afford to be without. I can make DNS changes quickly, manage my domains with ease, and run a report in seconds. And DNSstuff's 24 hour alert service helps me detect critical changes before my users do.

Like it or not, businesses are more vulnerable than ever to DNS attacks. I sleep better at night knowing I can depend on DNSstuff to deal with it. That's my point of view. For real.

— SAL QUINONEZ
IT Director, Thomas H. Lee Partners

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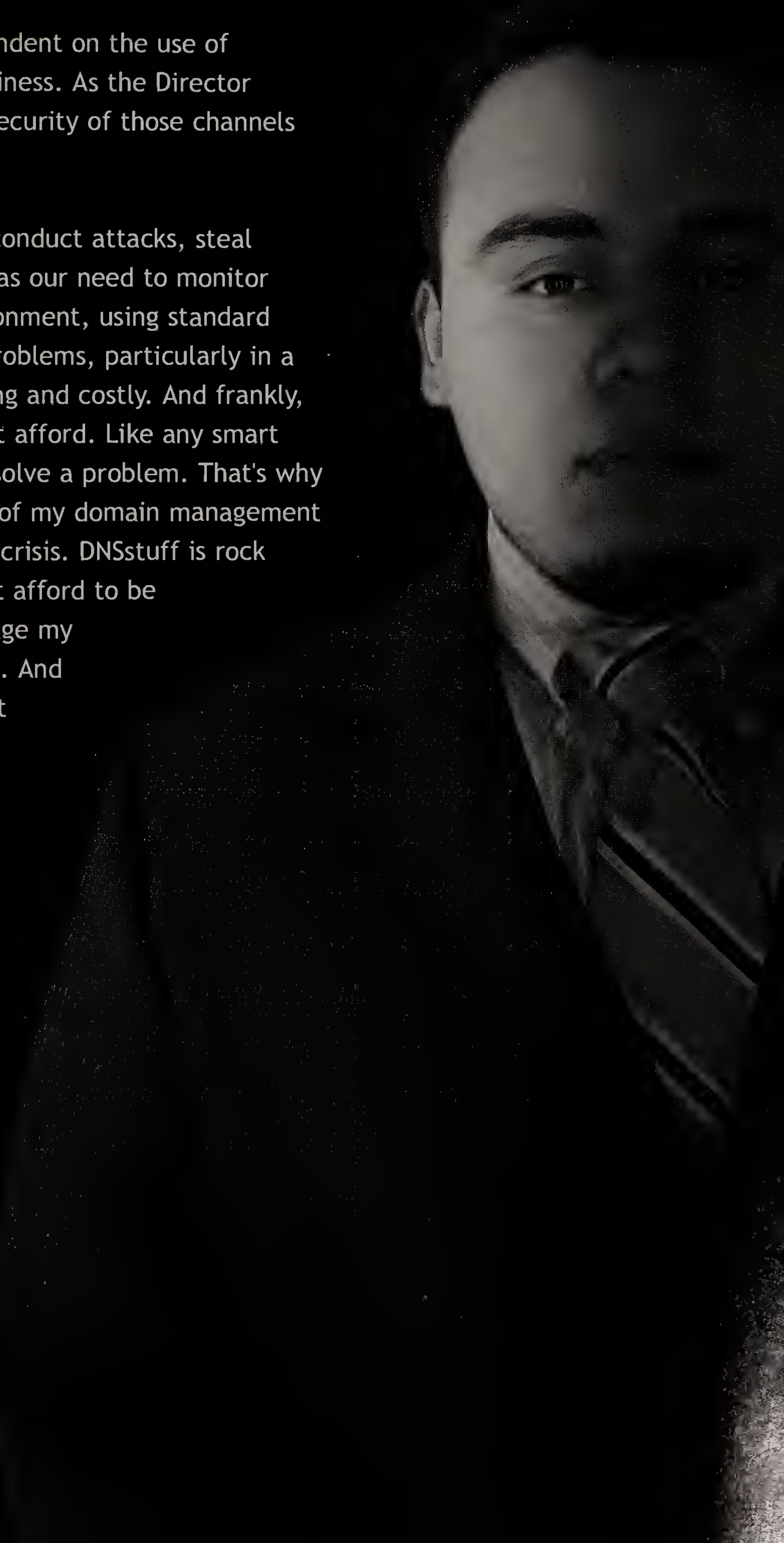

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